Chapter 1. Function & Limits:

1) The domain of binary relation $y^2 = -4x$ is,

A) R
B) Z
C) R^+
D) Negative real numbers including zero.

Answer: D

2) If S = {a, b, c} then the number of distinct relations on S is

A) 9
B) 2^9
C) 2^3
D) 9^2

Answer: B

3) The domain of the binary relation $2x^2 + 2y^2 = 18$ is

A) R
B) R^+
C) Z
D) {- 3, 3}

Answer: D

4) The range of the binary relation $4x^2 + 9y^2 = 36$ is

A) {- 2, 2}
B) {– 3, 3}
C) {- 2, 3}
D) R

Answer: A

5) If R1 = {(x, y) | x, y ∈ R and x >y} is a binary relation then its inverse is

A) {(1, 2), (2, 3)}
B) {(2, 1), (3, 2), (4, 3)}
C) {(x, y) | x = y}
D) {(x, y) | x, y ∈ R and y > x}

Answer: D

6) The graph of the binary relation $y = x^2 – 6x + 5$ represents

A) Line
B) Circle
C) Parabola
D) Ellipse

Answer: C

7) The graph of R1 = {(x, y) | x, y ∈ R and y > x} is

A) Line
B) Points on the line y = x
C) All points below the line y = x
D) All points above the line y = x

Answer: D

8) If f (x) = ax + b, where a, b ∈ R, a ≠ 0, then f is called a

A) Constant Function
B) Linear Function
C) Quadratic Function
D) Polynomial Function

Answer: B

9) The graph of a linear function represents a

A) Circle
B) Line
C) Parabola
D) Ellipse

Answer: B

10) The equation having null set as its solution set is

A) x = cos x
B) $x = e^x$
C) x = sin x
D) x = tan x

Answer: B

11) The composition of two functions f and g is defined as (fog) (x) = f {g (x)}, for all x in the set

A) R_g
B) D_g
C) $D_g \cap D_f$
D) $R_g \cap D_f$

Answer: D

12) If f(x) = x and $g(x) = x^2$ then the value of (fog) (x) is

A) x^2
B) x
C) x^3
D) x^4

Answer: A

13) Let f: S → T be a one – to – one function such that $f(x_1) = 6$ and f(2) = 6 then the value of x_1 is :

A) 6
B) 2
C) 3
D) 12

Answer: B

14) Let f(x) = 5x + 3 then f is

A) One – to – one function
B) Onto function
C) Constant function
D) Both one-to-one and onto function

Answer: D

15) Let : S $\rightarrow$ S be an identity function and 2 $\in$ S, then the value of f(2) is

A) 2
B) – 2
C) 3
D) ½

Answer: A

16) Let g = {(1, 1), (2, 3), (3, 2), (4, 4)} be a function from S onto S, then the value of g^{-1} (2) is,

A) 2
B) 3
C) 4
D) 1

Answer: B

17) Let f(x) = 5x + 1, x $\in$ R then value of f^{-1} (6) is,

A) 31
B) 1
C) 6
D) 1/6

Answer: B

18) If g(x) = 2x + 1 then the value of $g^2(1)$ is

A) 3
B) 9
C) 7
D) 8

Answer: C

20) The graph of the function y = x and y = tan x intersect at the point

A) x = π/4
B) x = 0
C) x = π/2
D) x = π/3

Answer: B

21) The solution set of the equation x = tan x is

A) ϕ
B) {π/4}
C) {1}
D) {0}

Answer: D

22) The solution set of $2x^3 - 3x^2 + 4x - 5 = 0$ can have at the most,

A) 4 members
B) 3 members
C) 2 members
D) 5 members

Answer: B

23) If f (x) = $2x^2 - 1$ and g(x) = 5x + 2 then value of f[g(2)] is

A) 312
B) 87
C) 287
D) 288

Answer: C

24) The inverse function of the function $y = \frac{x-1}{x+1}, \quad x \neq -1$ is

A) $f^{-1}(y) = \frac{y+1}{y-1}$

B) $f^{-1}(y) = \frac{1-y}{1+y}$

C) $f^{-1}(y) = \frac{1+y}{1-y}$

D) $f^{-1}(y) = \frac{1-y}{y-1}$

Answer: C

25) If $y = \frac{x}{x+2}, \quad x \neq -2$ is a function then the value of f^{-1} (2) is, (Here y = f(x))

A) ½
B) 4
C) ¼
D) – 4

Answer: D

26) If the variable x takes in succession the value $3, 3\frac{1}{2}, 3\frac{2}{3}, 3\frac{4}{5}, 3\frac{5}{8}, \ldots\ldots$ then x approaches

A) 4
B) 3
C) $3\frac{5}{8}$
D) 5

Answer: A

27) If h > 0, then as h approaches zero, $\tan(\frac{3\pi}{2} + h)$ approaches

A) - ∞
B) ∞
C) 0
D) – 1

Answer: A

28) The values of $Lim_{h \to 0} Co\sec(\pi + h), \quad h > 0$ is

A) 0
B) ∞
C) - ∞
D) – 1

Answer: C

29) The value of $Lim_{x\to 0}\frac{\sin ax}{bx}$ is

A) a

B) $\frac{a}{b}$

C) b

D) $\frac{b}{a}$

Answer: B

30) The value of $Lim_{x\to\infty}(1+\frac{4}{x})^{\frac{x}{4}}$ is

A) e^4

B) $\frac{e}{4}$

C) $\frac{4}{e}$

D) e

Answer: D

Chapter 1 NUMBER SYSTEMS

1) $\sqrt{3}$ is

A) Rational
B) Irrational
C) Integer
D) Prime

Answer: B

2) Product $\sqrt{-2} \times \sqrt{-2}$ is equal to

A) – 2
B) 2
C) 0
D) 4

Answer: A

3) $|Z_1 Z_2| =$

A) $|Z_1||Z_2|$
B) $|Z_1| + |Z_2|$
C) $|Z_1| - |Z_2|$
D) $\frac{|Z_1|}{|Z_2|}$

Answer: A

4) If x < y, y < z then

A) x > z
B) x < z
C) x = z
D) none of these

Answer: B

5) $|Z_1 + Z_2|$ is

A) $= |Z_1| + |Z_2|$
B) $> |Z_1| + |Z_2|$
C) $\leq |Z_1| + |Z_2|$
D) $= |Z_1| \times |Z_2|$

Answer. C

6) $(-i)^5$ is

A) i
B) – 1
C) 1
D) – i

Answer: D

6) The conjugate of – 6 + 3i

A) – 6 – 3i
B) – 6 + 3i
C) 6 + 3i
D) 6 – 3i

Answer: A

7) The solution set of 5x + 8 = 0 when x ∈ N is

A) non empty set
B) $-\frac{8}{5}$
C) $\frac{8}{5}$
D) empty set

Answer: D

8) For all x, y, z ∈ R, if (x y) z = x (yz) then this property is called

A) Commutative property under multiplication
B) Associative under multiplication
C) Distributive under multiplication
D) Commutative under addition

Answer: B

9) The additive inverse of a complex number x + yi

A) x – iy
B) x + iy
C) – x – iy
D) $\{x/x^2 + y^2, -y/x^2 + y^2\}$

Answer: C

10) The conjugate of a complex number 5i

A) – 5
B) 5i
C) – 5i
D) 5

Answer: C

11) The property used in this equation 3 x 7 = 7 x 3 is called

A) Closure law
B) Commutative law for addition
C) Commutative property w.r.t multiplication
D) Identity

Answer: C

12) The additive inverse of (-x, -y) is

A) (-x, -y)
B) (x, y)
C) (-x, 0)
D) (x, -y)

Answer: B

13) The property used in the equation 8 + 0 = 8 is called

A) Commutative

B) Associative
C) Additive Identity
D) Additive Inverse

Answer: C

14) For all a, b, c ∈ R, if (a + b) + c = a + (b + c) then the property is called

A) Commutative under addition
B) Associative w.r.t addition
C) Distributive under addition
D) None of these

Answer: B

15) The inverse of an element 'a' under addition is

A) $\frac{1}{a}$
B) - a
C) 1
D) 0

Answer: B

16) The additive identity is

A) 0
B) – 1
C) 1
D) none of these

Answer: A

17) The product of two conjugate complex numbers is always a

A) Real number
B) Complex number
C) Irrational number
D) Natural number

Answer: A

18) The sum of two conjugate complex numbers is always a

A) Real number
B) Irrational number
C) Complex number
D) Natural number

Answer: A

19) $\left|\frac{1+2i}{2-i}\right| =$

A) 1
B) 5
C) ¾
D) 5/3

Answer: A

20) If Z_1, Z_2 be complex numbers then $\overline{Z_1 + Z_2} =$

A) $\overline{Z_1} - \overline{Z_2}$
B) $\overline{Z_1} + \overline{Z_2}$
C) $\overline{Z_1} + Z_2$
D) $Z_1 - \overline{Z_2}$

Answer: B

21) If z = (a, b), then $z^{-1} =$

A) (a, - b)
B) (-a , b)
C) $\left(\frac{a}{a^2+b^2}, \frac{-b}{a^2+b^2}\right)$
D) $\left(\frac{-a}{a^2+b^2}, \frac{b}{a^2+b^2}\right)$

Answer: C

22) If z = a + bi, then $|z| =$

A) $a^2 - b^2$
B) $a^2 + b^2$
C) $\sqrt{a^2 - b^2}$
D) $\sqrt{a^2 + b^2}$

Answer: D

23) If z1 and z2 are any two complex numbers then $|z_1| - |z_2|$

A) $< |z_1 + z_2|$
B) $\leq |z_1 + z_2|$
C) $> |z_1 + z_2|$
D) $\geq |z_1 + z_2|$

Answer: B

24) $(- i)^{15} =$

A) 1
B) – 1
C) i
D) – i

Answer: C

25) If $z_1 = (a, b)$ and $z_2 = (c, d)$ then $z_1 z_2 =$

A) (ac – bd, ad + bc)
B) (ac + bd, cd – bc)
C) (ad + bc, ac – bd)
D) (ad – bd, ac + bd)

Answer: A

26) $2x^2 + 3y^2 =$

A) (2x + 3iy) (2x – 3iy)
B) $(\sqrt{2}x + \sqrt{3}iy)(\sqrt{2}x - \sqrt{3}iy)$
C) (2x – 3y) (2x + 3y)
D) $(\sqrt{2}x + \sqrt{3}y)(\sqrt{2}x - \sqrt{3}yi)$

Answer: B

27) $\pi \in$ _____

A) N
B) Q
C) Q'
D) none

Answer: C

28) $\forall x \in R, x = x$ is called _____ property.

A) symmetric
B) reflexive
C) transitive
D) none

Answer: A

29) Every recurring $\in'$ terminating decimal represents

A) Q
B) Q'
C) R
D) none

Answer: A

30) The complex No. (a + ib) can be written as _____

A) (a, ib)
B) {a, b}
C) (a, b)
D) [a, b]

Answer: C

31) The imaginary part of the complex Nos. (b, a) is _____

A) ia
B) b
C) a
D) none

Answer: C

32) $If\ Z = I\ \ then\ \ \overline{\overline{Z}} =$ _____

A) i
B) – i
C) ±1
D) none

Answer: A

33) $If\ Z = -\overline{Z}\ then\ Z\ \ is$ _____

A) real
B) imaginary
C) neither type

34) $If\ Z = -1 - i\ \ then\ \overline{Z} =$ _____

A) (-1, -1)
B) (-1, 1)
C) (1, -1)
D) none

Answer: B

35) $|i| =$ _____

A) – 1
B) 1
C) 0
D) i

Answer: B

36) The magnitude of $\frac{1+2i}{2-i}$ is _____

A) 5 + 2i
B) – 1
C) 1
D) none

Answer: C

37) If x = 0, then multiplicative inverse of x is _____

A) $\frac{1}{x}$
B) – x
C) 1
D) 0
E) none

Answer: D

38) The real & imaginary part of $\frac{1}{2+i} + \frac{3}{2-i}$ is _____

A) $\frac{5}{8}, \frac{2}{5}$
B) $\frac{5}{8}, \frac{-2}{5}$
C) $\frac{8}{5}, \frac{2}{5}$
D) none

Answer: C

39) The value of i^n = _____ where n is an odd No.

A) – i
B) + i
C) ± i
D) none

Answer: D

40) If the area f triangle is 16, formed by the points Z, Z+iZ and iZ in a complex plane, then $|Z| =$ _____

A) 16
B) $5\sqrt{3}$
C) $4\sqrt{2}$
D) none

Answer: C

41) if $x + iy = 5 - 6i^{2k}$, then imaginary part (y) = _____

A) – 6
B) 6
C) 0
D) none

Answer: C

42) A real number is always

A) a natural no
B) positive integer
C) Rational number
D) complex number

Answer: C

43) The property used in the equation 7.8 + (- 7.8) = 0 is

A) Commutative
B) Associative
C) Additive Identity
D) Additive inverse

Answer: D

Trigonometric Identities

1. Distance r of the point $P(x_1, y_1)$ from the origin is given by the relation r = _____ ?

a) $x_1^2 + y_1^2$
b) $\sqrt{x_1^2 + y_1^2}$
c) $\sqrt{x_1^2 + y_1^2 + 2x_1y_1}$
d) $\sqrt{x_1^2}$
e) none of these

Answer: b

2. If $\text{Sin}\,\theta_1 = \text{Sin}\,\theta_2$ and $\text{Cos}\,\theta_1 = \text{Cos}\,\theta_2$ then

a) $\sin\frac{1}{2}(\theta_1 + \theta_2) = 0$
b) $\sin\frac{1}{2}(\theta_1 - \theta_2) = 0$
c) $\cos\frac{1}{2}(\theta_1 + \theta_2) = 0$
d) $\cos\frac{1}{2}(\theta_2 - \theta_1) = -1$
e) none of these

Answer: b

3. Distance r of the point P(1, 2) from the origin O(0, 0) is given by the relation r = ___ ?

a) 5
b) $\sqrt{5}$
c) 25
d) $\sqrt{3}$
e) None of these

Answer: b

4. $\cos(\alpha - \beta) =$

a) $\cos\alpha\cos\beta - \sin\alpha\sin\beta$
b) $\cos\alpha\cos\beta + \sin\alpha\sin\beta$
c) $\sin\alpha\cos\beta - \cos\alpha\sin\beta$
d) $\sin\alpha\cos\beta + \cos\alpha\sin\beta$
e) $\sin\alpha\sin\beta - \cos\alpha\cos\beta$

Answer: b

5. $\cos(\alpha + \beta) =$

a) $\cos\alpha\cos\beta - \sin\alpha\sin\beta$
b) $\cos\alpha\cos\beta + \sin\alpha\sin\beta$
c) $\sin\alpha\cos\beta - \cos\alpha\sin\beta$
d) $\sin\alpha\cos\beta + \cos\alpha\sin\beta$
e) $\sin\alpha\sin\beta - \cos\alpha\cos\beta$

Answer: a

6. $\sin(\alpha - \beta) =$

a) $\cos\alpha\cos\beta - \sin\alpha\sin\beta$
b) $\cos\alpha\cos\beta + \sin\alpha\sin\beta$
c) $\sin\alpha\cos\beta - \cos\alpha\sin\beta$
d) $\sin\alpha\cos\beta + \cos\alpha\sin\beta$
e) $\sin\alpha\sin\beta - \cos\alpha\cos\beta$

Answer: c

7. $\sin(\alpha + \beta) =$

a) $\cos\alpha\cos\beta - \sin\alpha\sin\beta$
b) $\cos\alpha\cos\beta + \sin\alpha\sin\beta$
c) $\sin\alpha\cos\beta - \cos\alpha\sin\beta$
d) $\sin\alpha\cos\beta + \cos\alpha\sin\beta$
e) $\sin\alpha\sin\beta - \cos\alpha\cos\beta$

Answer: d

8. $\cos(-\alpha) =$

a) $\sec\alpha$
b) $-\sin\alpha$
c) $\sin\alpha$
d) $-\cos\alpha$
e) $\cos\alpha$

Answer: e

9. $\sin(-\alpha) =$

a) $\sec\alpha$
b) $-\sin\alpha$
c) $\sin\alpha$
d) $-\cos\alpha$
e) $\cos\alpha$

Answer: b

10. $\cot(-\alpha) =$

a) $-\tan\alpha$
b) $\tan\alpha$
c) $\cot\alpha$
d) $-\cot\alpha$
e) $\cos\alpha$

Answer: d

11. $\tan(-\alpha) =$

a) $-\tan\alpha$
b) $\tan\alpha$
c) $\cot\alpha$
d) $-\cot\alpha$
e) $\cos\alpha$

Answer: a

12. $\sec(-\alpha) =$

a) $-\cos\alpha$
b) $-\sec\alpha$
c) $\sec\alpha$
d) $\operatorname{cosec}\alpha$
e) $-\operatorname{cosec}\alpha$

Answer: c

13. $\cos(90^\circ - \alpha) =$

a) $-\cos\alpha$
b) $\cos\alpha$
c) $-\sin\alpha$
d) $\sin\alpha$
e) $-\operatorname{cosec}\alpha$

Answer: d

14. $\sin(90^\circ - \alpha) =$

a) $\tan\alpha$
b) $\cos\alpha$
c) $-\sin\alpha$
d) $\sin\alpha$
e) $-\operatorname{cosec}\alpha$

Answer: b

15. $\tan(90^\circ - \alpha) =$

a) $\tan\alpha$
b) $-\tan\alpha$
c) $-\sin\alpha$
d) $-\cot\alpha$
e) $\cot\alpha$

Answer: e

16. $\cot(90^\circ - \alpha) =$

a) $\tan\alpha$
b) $-\tan\alpha$
c) $-\sin\alpha$
d) $-\cot\alpha$
e) $\cot\alpha$

Answer: a

17. $\sec(90^\circ - \alpha) =$

a) $-\operatorname{cosec}\alpha$
b) $\operatorname{cosec}\alpha$
c) $-\sec\alpha$
d) $\sec\alpha$
e) $\cot\alpha$

Answer: b

18. $\cos(\alpha - 90^\circ) =$

a) $-\operatorname{cosec}\alpha$
b) $\operatorname{cosec}\alpha$
c) $-\sec\alpha$
d) $\sin\alpha$
e) $\cot\alpha$

Answer: d

19. $\operatorname{cosec}(90^\circ - \alpha) =$

a) $-\operatorname{cosec}\alpha$
b) $\operatorname{cosec}\alpha$
c) $-\sec\alpha$
d) $\sec\alpha$
e) $\cot\alpha$

Answer: d

20. $\sec(\alpha - 90^\circ) =$

a) $\operatorname{cosec}\alpha$
b) $-\sec\alpha$
c) $-\cot\alpha$
d) $\cot\alpha$
e) $\cos\alpha$

Answer: a

21. $\sin(\alpha - 90^\circ) =$

a) $-\cos\alpha$
b) $\operatorname{cosec}\alpha$
c) $-\sec\alpha$
d) $\sin\alpha$
e) $\cos\alpha$

Answer: a

22. $\tan(\alpha - 90^\circ) =$

a) $\tan\alpha$
b) $-\tan\alpha$
c) $-\cot\alpha$
d) $\cot\alpha$
e) $\cos\alpha$

Answer: c

23. $\cos ec(\alpha - 90^\circ) =$

a) $\operatorname{cosec}\alpha$
b) $-\sec\alpha$
c) $-\cot\alpha$
d) $\cot\alpha$
e) $\cos\alpha$

Answer: b

24. $\cos\left(\frac{\pi}{2} - \alpha\right) =$

a) $\operatorname{cosec}\alpha$
b) $\cos\alpha$
c) $-\cos\alpha$
d) $-\sin\alpha$
e) $\sin\alpha$

Answer: e

25. $\sin\left(\frac{\pi}{2} - \alpha\right) =$

a) $\operatorname{cosec}\alpha$
b) $\cos\alpha$
c) $-\cos\alpha$
d) $-\sin\alpha$
e) $\sin\alpha$

Answer: b

26. $\cot\left(\frac{\pi}{2} - \alpha\right) =$

a) $\cot\alpha$
b) $\tan\alpha$
c) $-\cos\alpha$
d) $-\sin\alpha$
e) $\sin\alpha$

Answer: b

27. $\tan\left(\frac{\pi}{2} - \alpha\right) =$

a) $\cot\alpha$
b) $\tan\alpha$
c) $-\cos\alpha$
d) $-\sin\alpha$
e) $\sin\alpha$

Answer: a

28. $\cos\left(\alpha - \frac{\pi}{2}\right) =$

a) $\sec\alpha$
b) $-\cos\alpha$
c) $\cos\alpha$
d) $-\sin\alpha$
e) $\sin\alpha$

Answer: e

29. $\sin\left(\alpha - \frac{\pi}{2}\right) =$

a) $\sec\alpha$
b) $-\cos\alpha$
c) $\cos\alpha$
d) $-\sin\alpha$
e) $\sin\alpha$

Answer: b

30. $\tan\left(\alpha - \frac{\pi}{2}\right) =$

a) $\sec\alpha$
b) $\cot\alpha$
c) $-\cot\alpha$
d) $\tan\alpha$

e) $-\tan\alpha$

Answer: c

31. $\sec\left(\alpha-\frac{\pi}{2}\right)=$

a) $\sec\alpha$
b) $\cot\alpha$
c) $\text{cosec}\,\alpha$
d) $\tan\alpha$
e) $-\tan\alpha$

Answer: c

32. $\cos ec\left(\alpha-\frac{\pi}{2}\right)=$

a) $\sec\alpha$
b) $-\sec\alpha$
c) $\text{cosec}\,\alpha$
d) $\tan\alpha$
e) $-\tan\alpha$

Answer: b

33. $\cos(\alpha+90^\circ)=$

a) $-\sin\alpha$
b) $\sin\alpha$
c) $\cos\alpha$
d) $-\cos\alpha$
e) $-\tan\alpha$

Answer: a

34. $\sin(\alpha+90^\circ)=$

a) $-\sin\alpha$
b) $\sin\alpha$
c) $\cos\alpha$
d) $-\cos\alpha$
e) $-\tan\alpha$

Answer: c

35. $\cot(\alpha+90^\circ)=$

a) $-\sin\alpha$
b) $-\cot\alpha$
c) $\cot\alpha$
d) $\tan\alpha$
e) $-\tan\alpha$

Answer: e

36. $\csc(\alpha+90^\circ)=$

a) $-\sin\alpha$
b) $-\csc\alpha$
c) $-\sec\alpha$
d) $\csc\alpha$
e) $\sec\alpha$

Answer: e

37. $\cos\left(\frac{\pi}{2}+\alpha\right)=$

a) $-\sin\alpha$
b) $-\csc\alpha$
c) $-\sec\alpha$
d) $\csc\alpha$
e) $\sec\alpha$

Answer: a

38. $\sin\left(\frac{\pi}{2}+\alpha\right)=$

a) $-\sin\alpha$
b) $-\csc\alpha$
c) $-\sec\alpha$
d) $\cos\alpha$
e) $\sec\alpha$

Answer: d

39. $\tan(\alpha+90^\circ)=$

a) $-\sin\alpha$
b) $-\cot\alpha$
c) $\cot\alpha$
d) $\tan\alpha$
e) $-\tan\alpha$

Answer: b

40. $\sec(\alpha+90^\circ)=$

a) $-\sin\alpha$
b) $\sec\alpha$
c) $-\sec\alpha$
d) $\csc\alpha$
e) $-\csc\alpha$

Answer: e

41. $\sec\left(\alpha+\frac{\pi}{2}\right)=$

a) $\sec\alpha$
b) $-\csc\alpha$
c) $\cot\alpha$
d) $-\cot\alpha$
e) $-\sec\alpha$

Answer: b

42. $\sin(\pi+\alpha)=$

a) $\cos\alpha$
b) $-\cos\alpha$
c) $-\sin\alpha$
d) $\sin\alpha$
e) $\cot\alpha$

Answer: c

43. $\csc(\pi-\alpha)=$

a) $\sec\alpha$
b) $-\sec\alpha$
c) $-\csc\alpha$
d) $\csc\alpha$
e) $-\tan\alpha$

Answer: d

44. $\cot(\pi-\alpha)=$

a) $\sin\alpha$
b) $\cot\alpha$
c) $-\cot\alpha$
d) $\tan\alpha$
e) $-\tan\alpha$

Answer: c

45. $\csc\left(\alpha+\frac{\pi}{2}\right)=$

a) $\sec\alpha$
b) $-\csc\alpha$
c) $\cot\alpha$
d) $-\cot\alpha$
e) $-\sec\alpha$

Answer: a

46. $\sin(\pi-\alpha)=$

a) $-\cos\alpha$
b) $\cos\alpha$
c) $-\sin\alpha$
d) $\sin\alpha$
e) $-\sec\alpha$

Answer: d

47. $\sec(\pi-\alpha)=$

a) $\sec\alpha$
b) $-\sec\alpha$
c) $-\csc\alpha$
d) $\csc\alpha$
e) $-\tan\alpha$

Answer: b

48. $\cos(\pi+\alpha)=$

a) $\cos\alpha$
b) $-\cos\alpha$
c) $-\sin\alpha$
d) $\sin\alpha$
e) $\cot\alpha$

Answer: b

49. $\tan(\pi-\alpha)=$

a) $\sin\alpha$
b) $\cot\alpha$
c) $-\cot\alpha$
d) $\tan\alpha$
e) $-\tan\alpha$

Answer: e

50. $\cos(\pi-\alpha)=$

a) $-\cos\alpha$
b) $\cos\alpha$
c) $-\sin\alpha$
d) $\sin\alpha$
e) $-\sec\alpha$

Answer: a

51. $\csc\left(\alpha+\frac{\pi}{2}\right)=$

a) $\sec\alpha$
b) $-\csc\alpha$
c) $\cot\alpha$
d) $-\cot\alpha$
e) $-\sec\alpha$

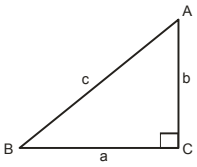
Answer: a

52. If $y = \frac{2\sin\alpha}{1+\cos\alpha+\sin\alpha}$ then $\frac{1-\cos\alpha+\sin\alpha}{1+\sin\alpha}$ is equal to

a) 1/y
b) Y
c) 1 – y
d) 1 + y
e) None of these

Answer: c

53. In the triangle ABC, where C is the right angle, tan A + tan B =



a) a + b
b) $\frac{a^2+b^2}{ab}$
c) a^2/bc
d) b^2/ac
e) None of these

Answer: b

54. $Sin(2\pi-\theta) =$ _____

a) $\sin\theta$
b) $-\sin\theta$
c) $\cos\theta$
d) $-\cos\theta$
e) $\tan\theta$

Answer: b

55. The value of the expression $\frac{1-\sin^2 y}{1+\cos y}+\frac{1-\cos y}{\sin y}-\frac{\sin y}{1-\cos y}$ is

a) 0
b) 1
c) Sin y
d) Cos y
e) None of these

Answer: d

56. $Cos(2\pi-\theta) =$ _____ ?

a) $\sin\theta$
b) $-\sin\theta$
c) $\cos\theta$
d) $-\cos\theta$
e) $\tan\theta$

Answer: c

57. $\cot(\alpha-\beta) =$

a) $\frac{\cot\alpha-\cot\beta}{1+\cot\alpha\cot\beta}$
b) $\frac{\cot\alpha+\cot\beta}{1-\cot\alpha\cot\beta}$
c) $\frac{\cot\alpha\cot\beta-1}{\cot\alpha+\cot\beta}$
d) $\frac{\cot\alpha\cot\beta+1}{-\cot\alpha+\cot\beta}$
e) none of these

Answer: d

58. $\tan(\alpha-\beta) =$

a) $\frac{\tan\alpha-\tan\beta}{1+\tan\alpha\tan\beta}$
b) $\frac{\tan\alpha+\tan\beta}{1-\tan\alpha\tan\beta}$
c) $\frac{\cot\alpha+\cot\beta}{1-\cot\alpha\cot\beta}$
d) $\frac{\cot\alpha-\cot\beta}{1+\cot\alpha\cot\beta}$
e) none of these

Answer: a

59. $\tan(\pi+\alpha) =$

a) $\tan\alpha$
b) $-\tan\alpha$
c) $\cot\alpha$
d) $-\cot\alpha$
e) $\sec\alpha$

Answer: a

60. $\sec(\pi+\alpha) =$

a) $\tan\alpha$

b) $-\csc\alpha$
c) $\csc\alpha$
d) $-\sec\alpha$
e) $\sec\alpha$

Answer: d

61. $\csc(\pi+\alpha)=$

a) $\tan\alpha$
b) $-\csc\alpha$
c) $\csc\alpha$
d) $-\sec\alpha$
e) $\sec\alpha$

Answer: b

62. $\tan(\alpha+\beta)=$

a) $\dfrac{\tan\alpha-\tan\beta}{1+\tan\alpha\tan\beta}$
b) $\dfrac{\tan\alpha+\tan\beta}{1-\tan\alpha\tan\beta}$
c) $\dfrac{\cot\alpha+\cot\beta}{1-\cot\alpha\cot\beta}$
d) $\dfrac{\cot\alpha-\cot\beta}{1+\cot\alpha\cot\beta}$
e) none of these

Answer: b

63. $\cot(\alpha+\beta)=$

a) $\dfrac{\cot\alpha-\cot\beta}{1+\cot\alpha\cot\beta}$
b) $\dfrac{\cot\alpha+\cot\beta}{1-\cot\alpha\cot\beta}$
c) $\dfrac{\cot\alpha\cot\beta-1}{\cot\alpha+\cot\beta}$
d) $\dfrac{\cot\alpha\cot\beta+1}{\cot\alpha+\cot\beta}$
e) none of these

Answer: c

64. $2\cos^2\left(\dfrac{\alpha}{2}\right)=$

a) $1+\cos\alpha$
b) $1-\cos\alpha$
c) $1+\sin\alpha$
d) $1-\sin\alpha$
e) $1-2\sin^2\alpha$

Answer: a

65. $\operatorname{Sin}\alpha\ =$

a) $1-2\sin^2\dfrac{\alpha}{2}$
b) $2\cos^2\dfrac{\alpha}{2}+1$
c) $\sin\dfrac{\alpha}{2}\cos\dfrac{\alpha}{2}$
d) $2\sin\dfrac{\alpha}{2}\cos\dfrac{\alpha}{2}$
e) $1-2\sin^2\alpha$

Answer: a

66. $\operatorname{Cos}\alpha\ =$

a) $\cos^2\dfrac{\alpha}{2}+\sin^2\dfrac{\alpha}{2}$
b) $\cos^2\dfrac{\alpha}{2}-\sin^2\dfrac{\alpha}{2}$
c) $\cos^2\alpha-\sin^2\alpha$
d) $\cos^2\alpha+\sin^2\alpha$
e) $2\sin\alpha$

Answer: b

67. $\operatorname{Cos}\alpha=$

a) $1-2\sin^2\dfrac{\alpha}{2}$
b) $2\cos^2\dfrac{\alpha}{2}+1$
c) $2\cos^2\alpha-1$
d) $2\cos^2\alpha+1$
e) $1-2\sin^2\alpha$

Answer: a

68. $2\sin^2\left(\dfrac{\alpha}{2}\right)=$

a) $1+\cos\alpha$
b) $1-\cos\alpha$
c) $1+\sin\alpha$
d) $1-\sin\alpha$
e) $1-2\sin^2\alpha$

Answer: b

69. $Tan(2\pi - \theta) =$ _____?

a) $Cot\theta$
b) $-Cot\theta$
c) $Tan\theta$
d) $-Tan\theta$
e) $-Cot\theta$

Answer: d

70. $Cos(2\pi + \theta) =$ _____?

a) $\text{Sin}\,\theta$
b) $-\text{Sin}\,\theta$
c) $\text{Cos}\,\theta$
d) $-\text{Cos}\,\theta$
e) $\text{Cot}\,\theta$

Answer: c

71. $Tan(2\pi + \theta) =$ _____?

a) $\text{Cot}\,\theta$
b) $-\text{Sin}\,\theta$
c) $\text{Tan}\,\theta$
d) $-\text{Tan}\,\theta$
e) $-\text{Tan}\ \theta$

Answer: c

72. $Sin(2\pi + \theta) =$

a) $\text{Sin}\,\theta$
b) $-\text{Sin}\,\theta$
c) $\text{Cos}\,\theta$
d) $-\text{Cos}\,\theta$
e) $-\text{Cosec}\,\theta$

Answer: a

73. $1 + Cos2\alpha =$

a) $2\sin\alpha$
b) $2\cos\alpha$
c) $2\sec\alpha$
d) $2\sin^2\alpha$
e) $2\cos^2\alpha$

Answer: e

74. $\text{Cos}2\alpha\ =$

a) $1 + \cos\alpha$
b) $1\sin^2\alpha + 1$
c) $2\cos^2\alpha - 1$
d) $2\cos^2\alpha + 1$
e) $\text{Cos}^2\alpha - 1$

Answer: e

75. $\text{Sin}2\alpha =$

a) $\text{Cos}^2\alpha - \text{Sin}^2\alpha$
b) $2\text{Sin}^2\alpha + 1$
c) $2\text{Sin}\,\alpha\ \text{Cos}\,\alpha$
d) $\text{Sin}\,\alpha\ \text{Cos}\,\alpha$
e) $2\text{Cos}^2\alpha - 1$

Answer: c

76. $\text{Cos}2\alpha\ =$

a) $\cos^2\alpha + \sin^2\alpha$
b) $2\sin^2\alpha + 1$
c) $2\sin^2\alpha - 1$
d) $2\cos^2\alpha + 1$
e) $2\cos^2\alpha - 1$

Answer: e

77. $\text{Sin}\,\alpha\ =$

a) $\pm\sqrt{\dfrac{1-\cos 2\alpha}{2}}$
b) $\pm\sqrt{\dfrac{1+\cos 2\alpha}{2}}$
c) $\pm\sqrt{\dfrac{1+\sin 2\alpha}{2}}$
d) $\pm\sqrt{\dfrac{1-\sin 2\alpha}{2}}$
e) $\pm\sqrt{\dfrac{1+\sec 2\alpha}{2}}$

Answer: a

78. $1 + \cos4\alpha\ =$

a) $2\cos^2\alpha$
b) $4\sin^2\alpha$
c) $4\cos^2\alpha$
d) $2\sin^2 2\alpha$
e) $2\cos^2 2\alpha$

Answer: e

79. $1-\cos 4\alpha =$

a) $2\cos^2\alpha$
b) $4\sin^2\alpha$
c) $4\cos^2\alpha$
d) $2\sin^2 2\alpha$
e) $2\cos^2 2\alpha$

Answer: d

80. $\text{Cos}\,\alpha =$

a) $\pm\sqrt{\frac{1-\cos 2\alpha}{2}}$
b) $\pm\sqrt{\frac{1+\cos 2\alpha}{2}}$
c) $\pm\sqrt{\frac{1+\sin 2\alpha}{2}}$
d) $\pm\sqrt{\frac{1-\sin 2\alpha}{2}}$
e) $\pm\sqrt{\frac{1+\sec 2\alpha}{2}}$

Answer: b

81. $1-\cos 3\alpha =$

a) $2\cos^2\left(\frac{3\alpha}{2}\right)$
b) $2\sin^2\left(\frac{3\alpha}{2}\right)$
c) $\frac{3}{2}\cos^2\left(\frac{3\alpha}{2}\right)$
d) $2\sin^2 2\alpha$
e) $2\cos^2 3\alpha$

Answer: b

82. $1+\cos 6\alpha =$

a) $3\sin^2\alpha$
b) $2\sin^2 3\alpha$
c) $3\sin^2 3\alpha$
d) $2\sin^2 2\alpha$
e) $2\cos^2 3\alpha$

Answer: e

83. $1-\cos 5\alpha =$

a) $2\cos^2\left(\frac{5\alpha}{2}\right)$
b) $2\sin^2\left(\frac{5\alpha}{2}\right)$
c) $\frac{5}{2}\cos^2\left(\frac{3\alpha}{2}\right)$
d) $2\sin^2 2\alpha$
e) $2\cos^2 3\alpha$

Answer: b

84. $1+\cos 5\alpha =$

a) $2\cos^2\left(\frac{5\alpha}{2}\right)$
b) $2\sin^2\left(\frac{5\alpha}{2}\right)$
c) $\frac{5}{2}\cos^2\left(\frac{3\alpha}{2}\right)$
d) $2\sin^2 2\alpha$
e) $2\cos^2 3\alpha$

Answer: a

85. $1+\cos 3\alpha =$

a) $2\cos^2\left(\frac{3\alpha}{2}\right)$
b) $\sin^2\left(\frac{3\alpha}{2}\right)$
c) $\frac{3}{2}\cos^2\left(\frac{3\alpha}{2}\right)$
d) $2\sin^2 2\alpha$
e) $2\cos^2 3\alpha$

Answer: c

86. $\tan 2\alpha =$

a) $\frac{2\tan^2\alpha}{1-\tan\alpha}$
b) $\frac{2\tan\alpha}{1-\tan^2\alpha}$
c) $\frac{2\tan\alpha}{1-\tan^2\alpha}$
d) $\frac{2\cot\alpha}{1+\cot^2\alpha}$
e) $\frac{2\cot\alpha}{1-\cot^2\alpha}$

Answer: c

87. $\tan 4\alpha =$

a) $\dfrac{4\tan^2\alpha}{1-\tan\alpha}$

b) $\dfrac{2\tan 2\alpha}{1+\tan^2 2\alpha}$

c) $\dfrac{2\tan 2\alpha}{1-\tan^2 2\alpha}$

d) $\dfrac{4\tan 2\alpha}{1-\tan^2 2\alpha}$

e) $\dfrac{4\tan 2\alpha}{1+\tan^2 2\alpha}$

Answer: c

88. $\cos 3\alpha =$

a) $4\cos^3\alpha - 3\cos\alpha$

b) $3\cos^3\alpha - 4\cos\alpha$

c) $3\sin\alpha - 4\sin^3\alpha$

d) $4\sin\alpha - 3\sin^3\alpha$

e) $3\cos\alpha$

Answer: a

89. $\sin 3\alpha =$

a) $4\cos^3\alpha - \cos\alpha$

b) $3\cos^3\alpha - 4\cos\alpha$

c) $3\sin\alpha - 4\sin^3\alpha$

d) $4\sin\alpha - 3\sin^3\alpha$

e) $3\cos\alpha$

Answer: c

90. $\tan 3\alpha =$

a) $\dfrac{3\tan\alpha - \tan^3\alpha}{1-3\tan^2\alpha}$

b) $\dfrac{3\tan\alpha + \tan^3\alpha}{1-3\tan^2\alpha}$

c) $\dfrac{3\tan\alpha - \tan^3\alpha}{1+3\tan^2\alpha}$

d) $\dfrac{3\cot\alpha - \cot^3\alpha}{1-3\cot^2\alpha}$

e) $3\tan\alpha$

Answer: a

91. $\sin 2\alpha =$

a) $\dfrac{1+\tan^2\alpha}{1-\tan^2\alpha}$

b) $\dfrac{2\tan\alpha}{1-\tan^2\alpha}$

c) $\dfrac{1+\tan^2\alpha}{1-\tan^2\alpha}$

d) $\dfrac{2\tan\alpha}{1+\tan^2\alpha}$

e) $2\sin\alpha$

Answer: d

92. $\cos 12\alpha$

a) $3\cos^3\alpha - 4\cos 4\alpha$

b) $4\cos^3 4\alpha - 3\cos 4\alpha$

c) $3\sin 4\alpha - 4\sin^3 4\alpha$

d) $4\sin 4\alpha - 3\sin^3 4\alpha$

e) $12\cos\alpha$

Answer: b

93. $\sin 9\alpha$

a) $4\cos^3\alpha - 3\cos\alpha$

b) $3\cos^3 3\alpha - 4\cos 3\alpha$

c) $3\sin 3\alpha - 4\sin^3 3\alpha$

d) $4\sin 3\alpha - 3\sin^3 3\alpha$

e) $9\cos\alpha$

Answer: c

94. $\cos 9\alpha$

a) $4\cos^3\alpha - 3\cos 3\alpha$

b) $3\cos^3 3\alpha - 4\cos 3\alpha$

c) $3\sin 3\alpha - 4\sin^3 3\alpha$

d) $4\sin 3\alpha - 3\sin^3 3\alpha$

e) $9\cos\alpha$

Answer: e

95. $2\cos\alpha\cos\beta =$

a) $\cos(\alpha+\beta)+\cos(\alpha-\beta)$

b) $\cos(\alpha+\beta)-\cos(\alpha-\beta)$

c) $\sin(\alpha+\beta)+\sin(\alpha-\beta)$

d) $\sin(\alpha+\beta)-\sin(\alpha-\beta)$

e) None of these

Answer: a

96. $\cos 2\alpha =$

a) $\frac{1+\tan^2\alpha}{1-\tan^2\alpha}$

b) $\frac{2\tan\alpha}{1-\tan^2\alpha}$

c) $\frac{1-\tan^2\alpha}{1+\tan^2\alpha}$

d) $\frac{2\tan\alpha}{1+\tan^2\alpha}$

e) $2\sin\alpha$

Answer: c

97. $\cos 2\alpha$ =

a) $\cos(\alpha+\beta)+\cos(\alpha-\beta)$

b) $\cos(\alpha+\beta)-\cos(\alpha-\beta)$

c) $\sin(\alpha+\beta)+\sin(\alpha-\beta)$

d) $\sin(\alpha+\beta)-\sin(\alpha-\beta)$

e) None of these

Answer: c

98. $2\cos\alpha\ \sin\beta =$

a) $\cos(\alpha+\beta)+\cos(\alpha-\beta)$

b) $\cos(\alpha+\beta)-\cos(\alpha-\beta)$

c) $\sin(\alpha+\beta)+\sin(\alpha-\beta)$

d) $\sin(\alpha+\beta)-\sin(\alpha-\beta)$

e) None of these

Answer: d

99. $2\sin\alpha\ \sin\beta$ =

a) $\cos(\alpha+\beta)+\cos(\alpha-\beta)$

b) $\cos(\alpha-\beta)-\cos(\alpha+\beta)$

c) $\sin(\alpha+\beta)+\sin(\alpha-\beta)$

d) $\sin(\alpha+\beta)-\sin(\alpha-\beta)$

e) None of these

Answer: b

100. $\cos\theta-\cos\phi =$

a) $-2\sin\frac{\theta+\phi}{2}\sin\frac{\theta-\phi}{2}$

b) $2\sin\frac{\theta+\phi}{2}\sin\frac{\theta-\phi}{2}$

c) $2\sin\frac{\theta+\phi}{2}\cos\frac{\theta-\phi}{2}$

d) $2\cos\frac{\theta+\phi}{2}\cos\frac{\theta-\phi}{2}$

e) None of these

Answer: a

101. $\sin\theta+\sin\phi =$

a) $-2\sin\frac{\theta+\phi}{2}\sin\frac{\theta-\phi}{2}$

b) $2\sin\frac{\theta+\phi}{2}\sin\frac{\theta-\phi}{2}$

c) $2\sin\frac{\theta+\phi}{2}\cos\frac{\theta-\phi}{2}$

d) $2\cos\frac{\theta+\phi}{2}\cos\frac{\theta-\phi}{2}$

e) None of these

Answer: c

102. $\sin\theta-\sin\phi =$

a) $-2\sin\frac{\theta+\phi}{2}\sin\frac{\theta-\phi}{2}$

b) $2\sin\frac{\theta+\phi}{2}\sin\frac{\theta-\phi}{2}$

c) $2\sin\frac{\theta+\phi}{2}\cos\frac{\theta-\phi}{2}$

d) $2\cos\frac{\theta+\phi}{2}\cos\frac{\theta-\phi}{2}$

e) None of these

Answer: d

103. $\cos\frac{\pi}{12} =$

a) $\frac{\sqrt{3}-1}{2\sqrt{2}}$

b) $\frac{\sqrt{3}+1}{2\sqrt{2}}$

c) $\frac{\sqrt{3}+1}{\sqrt{2}}$

d) $\frac{\sqrt{3}-1}{\sqrt{2}}$

e) 1

Answer: b

104. $\text{Cos}315^{\circ} =$

a) $\frac{1}{\sqrt{2}}$

b) $-\frac{1}{\sqrt{2}}$

c) $\frac{3}{\sqrt{2}}$

d) $-\frac{3}{\sqrt{2}}$

e) 0

Answer: a

105. $\text{Cos}540^{o} =$

a) $\frac{1}{\sqrt{2}}$

b) $-\frac{1}{\sqrt{2}}$

c) $\frac{3}{\sqrt{2}}$

d) $-\frac{3}{\sqrt{2}}$

e) – 1

Answer: e

106. $\text{Tan}\ (-\ 135^{o}) =$

a) $\frac{1}{\sqrt{2}}$

b) $-\frac{1}{\sqrt{2}}$

c) $\frac{3}{\sqrt{2}}$

d) 1

e) 0

Answer: d

107. $\text{sec}(-\ 300^{o}) =$

a) 4

b) 3

c) 2

d) 1

e) 0

Answer: c

108. $\cot\ (-\ 855^{o}) =$

a) 2

b) 1

c) – 1

d) 0

e) – 2

Answer: b

109. $\text{sec}(-\ 960^{o}) =$

a) 2

b) 1

c) – 1

d) 0

e) – 2

Answer: e

110. $\sin\ (-\ 780^{o}) =$

a) $-\frac{\sqrt{3}}{2}$

b) $\frac{\sqrt{3}}{2}$

c) $\frac{2}{\sqrt{3}}$

d) 0

e) 1

Answer: a

111. $\cos\ 254^{o} =$

a) $-\cos 33^{o}$

b) $\text{Cos}5^{o}$

c) $\text{Cos}16^{o}$

d) $\text{Sin}16^{o}$

e) $-\sin 16^{o}$

Answer: e

112. $\cos\ (-435^{o}) =$

a) $\cos 15^{o}$

b) $-\cos 15^{o}$

c) $-\sin 15^{o}$

d) $\text{Sin}15^{o}$

e) $\text{Sin}25^{o}$

Answer: d

113. $\sin(\alpha+\beta).\cos(\alpha-\beta) =$

a) $\sin\alpha-\sin\beta$
b) $\sin\alpha+\sin\beta$
c) $\sin^2\alpha-\sin^2\beta$
d) $\sin^2\alpha-\sin^2\beta+1$
e) 0

Answer: d

114. $\sin(\alpha+\beta).\sin(\alpha-\beta)=$

a) $\sin\alpha-\sin\beta$
b) $\sin\alpha+\sin\beta$
c) $\sin^2\alpha-\sin^2\beta$
d) $\cos^2\beta-\cos^2\alpha$
e) 0

Answer: d

115. $\sin(45^\circ+\alpha)=$

a) $\sin\alpha+\cos\alpha$
b) $\sin\alpha-\cos\alpha$
c) $\frac{1}{\sqrt{2}}(\sin\alpha+\cos\alpha)$
d) $\frac{1}{\sqrt{2}}(\sin\alpha-\cos\alpha)$
e) $\sin\alpha$

Answer: e

116. $\tan(180^o+\theta)=$

a) $\cot\theta$
b) $\tan\theta$
c) $\sin\theta$
d) $-\tan\theta$
e) $-\cos\theta$

Answer: b

117. $\cos(\alpha+\beta).\cos(\alpha-\beta)=$

a) $\cot 2\alpha$
b) $\cos^2\alpha-\cos^2\beta$
c) $\sin 2\alpha$
d) $\tan 2\alpha$
e) None of these

Answer: b

118. $\frac{\tan\alpha+\tan\beta}{\tan\alpha-\tan\beta}$

a) $\frac{\cos(\alpha+\beta)}{\cos(\alpha-\beta)}$
b) $\frac{\cos(\alpha-\beta)}{\cos(\alpha+\beta)}$
c) $\frac{\sin(\alpha-\beta)}{\sin(\alpha+\beta)}$
d) $\frac{\sin(\alpha+\beta)}{\sin(\alpha-\beta)}$
e) $-\tan\alpha$

Answer: d

119. $\cos^4\theta=$

a) $\frac{1}{8}[3-4\cos 2\theta+2\cos 4\theta]$
b) $\frac{1}{8}[3+4\cos 2\theta+2\cos 4\theta]$
c) $4\sin^3\theta\ \cos\theta$
d) $-4\text{cosn}^3\theta\ \sin\theta$
e) none of these

Answer: b

120. $\sqrt{\frac{1+\sin\alpha}{1-\sin\alpha}}=$

a) $\frac{\tan\frac{\alpha}{2}+\cos\frac{\alpha}{2}}{\tan\frac{\alpha}{2}-\cos\frac{\alpha}{2}}$
b) $\frac{\sin\frac{\alpha}{2}-\cos\frac{\alpha}{2}}{\sin\frac{\alpha}{2}+\cos\frac{\alpha}{2}}$
c) $\frac{\sin\frac{\alpha}{2}+\cos\frac{\alpha}{2}}{\sin\frac{\alpha}{2}-\cos\frac{\alpha}{2}}$
d) $\frac{\tan\frac{\alpha}{2}-\cos\frac{\alpha}{2}}{\tan\frac{\alpha}{2}+\cos\frac{\alpha}{2}}$
e) $4\cos 4\alpha$

Answer: c

121. $\frac{\sin 3\theta}{\cos\theta}+\frac{\cos 3\theta}{\sin\theta}=$

a) $\sin\theta$
b) $2\cot 2\theta$
c) $\cos\theta$
d) $-\sec\theta$
e) $\sec\theta$

Answer: b

122. $2\sin 3\theta\ \cos\theta =$

a) $\cot 4\theta + \cot 2\theta$
b) $\cos 4\theta + \cos 2\theta$
c) $\cos 4\theta - \cos 2\theta$
d) $\sin 4\theta - \sin 2\theta$
e) $\sin 4\theta + \sin 2\theta$

Answer: e

123. $\sin 5\theta + \sin 3\theta =$

a) $2\cos 2\theta\ \sin\theta$
b) $-2\cos 4\theta\ \sin\theta$
c) $-2\sin 4\theta\ \cos\theta$
d) $2\cos 4\theta\ \sin\theta$
e) $2\sin 4\theta\ \cos\theta$

Answer: e

124. $2\sin 12^{o}\ \sin 46^{o} =$

a) $\cos 34^{o}\ \cos 58^{o}$
b) $\sin 34^{o} + \sin 58^{o}$
c) $\sin 34^{o} - \sin 58^{o}$
d) $\cos 34^{o} + \cos 58^{o}$
e) $\cos 34^{o} - \cos 58^{o}$

Answer: e

125. $\frac{\cos x-\cos 3x}{\sin 3x-\sin x}=$

a) $\cot 2x$
b) $\tan 2x$
c) $\csc 2x$
d) $\sec 2x$
e) $\cos 2x$

Answer: b

126. $\csc(-\alpha) =$

a) $-\cos\alpha$
b) $-\sec\alpha$
c) $\sec\alpha$
d) $\csc\alpha$
e) $-\csc\alpha$

Answer: e

127. $\cot(\alpha - 90^{o}) =$

a) $\tan\alpha$
b) $-\tan\alpha$
c) $-\cot\alpha$
d) $\cot\alpha$
e) $\cos\alpha$

Answer: b

128. $\csc\left(\frac{\pi}{2}-\alpha\right)=$

a) $-\csc\alpha$
b) $\csc\alpha$
c) $-\sec\alpha$
d) $\sec\alpha$
e) $\cot\alpha$

Answer: d

129. $\tan\left(\alpha+\frac{\pi}{2}\right)=$

a) $\tan\alpha$
b) $-\tan\alpha$
c) $\cot\alpha$
d) $-\cot\alpha$
e) $\sec\alpha$

Answer: d

130. $\cot\left(\alpha+\frac{\pi}{2}\right)=$

a) $\tan\alpha$
b) $-\tan\alpha$
c) $\cot\alpha$

d) $-\cot\alpha$
e) $\sec\alpha$

Answer: b

131. $\cos\alpha =$

a) $1-2\sin^2\frac{\alpha}{2}$
b) $2\cos^2\frac{\alpha}{2}+1$
c) $2\cos^2\alpha - 1$
d) $2\cos^2\alpha + 1$
e) $1-2\sin^2\alpha$

Answer: a

132. $1-\cos2\alpha =$

a) $2\sin\alpha$
b) $2\cos\alpha$
c) $2\sec\alpha$
d) $2\sin^2\alpha$
e) $2\cos^2\alpha$

Answer: d

133. $1-\cos6\alpha =$

a) $3\sin^2\alpha$
b) $2\sin^2 3\alpha$
c) $3\sin^2 3\alpha$
d) $2\sin^2 2\alpha$
e) $2\cos^2 3\alpha$

Answer: b

134. $\cos\theta+\cos\phi =$

a) $-2\sin\frac{\theta+\phi}{2}\sin\frac{\theta-\phi}{2}$
b) $2\sin\frac{\theta+\phi}{2}\sin\frac{\theta-\phi}{2}$
c) $2\sin\frac{\theta+\phi}{2}\cos\frac{\theta-\phi}{2}$
d) $2\cos\frac{\theta+\phi}{2}\cos\frac{\theta-\phi}{2}$
e) none of these

Answer: d

Trigonometric Functions & Their Graphs

1. Range of the sine function is _____ ?

a) {x | - 1 < x > 1}
b) {x | - 1 < x < 1}
c) {x | 0 x > 1}
d) {x < 1}
e) None of these

Answer: b

2. The domain of sinx is

a) [- 1 , 1]
b) R
c) R - $\left\{x \middle| x=(2n+1)\frac{\pi}{2}, n \in Z\right\}$
d) $R-\{x|x=n\pi, n \in Z\}$
e) $R-\{x|-1<x<1\}$

Answer: b

3. Range of the cosine function is = _____?

a) {x | - 1 < x > 1}
b) {x | - 1 < x < 1}
c) {x | 0 x > 1}
d) {x > 1}
e) None of these

Answer: b

4. The domain of the cosx is

a) [-1, 1]
b) R
c) R - $\left\{x \middle| x=(2n+1)\frac{\pi}{2}, n \in Z\right\}$
d) $R-\{x|x=n\pi, n \in Z\}$
e) $R-\{x|-1<x<1\}$

Answer: b

5. The domain of tanx is

a) [-1, 1]
b) R
c) R - $\left\{x \middle| x=(2n+1)\frac{\pi}{2}, n \in Z\right\}$
d) $R-\{x|x=n\pi, n \in Z\}$
e) $R-\{x|-1<x<1\}$

Answer: c

6. The domain of cotx is

a) [-1, 1]
R
R - $\left\{x \middle| x=(2n+1)\frac{\pi}{2}, n \in Z\right\}$
$R-\{x|x=n\pi, n \in Z\}$
$R-\{x|-1<x<1\}$

Answer: d

7. The domain of secx is

a) [-1, 1]
b) R
c) R - $\left\{x \middle| x=(2n+1)\frac{\pi}{2}, n \in Z\right\}$
d) $R-\{x|x=n\pi, n \in Z\}$
e) $R-\{x|-1<x<1\}$

Answer: c

8. The domain of cscx is

a) [-1, 1]
b) R
c) R - $\left\{x \middle| x=(2n+1)\frac{\pi}{2}, n \in Z\right\}$
d) $R-\{x|x=n\pi, n \in Z\}$
e) $R-\{x|-1<x<1\}$

Answer: d

9. The range of sinx is

a) [-1, 1]
b) R
c) R - $\left\{x \middle| x=(2n+1)\frac{\pi}{2}, n \in Z\right\}$
d) $R-\{x|x=n\pi, n \in Z\}$
e) $R-\{x|-1<x<1\}$

Answer: a

10. The range of cosx is

a) [-1, 1]

b) R

c) R - $\left\{x \middle| x = (2n+1)\frac{\pi}{2}, n \in Z\right\}$

d) $R - \left\{x \middle| x = n\pi, n \in Z\right\}$

e) $R - \left\{x \middle| -1 < x < 1\right\}$

Answer: a

11. The range of tanx is

a) [-1, 1]

b) R

c) R - $\left\{x \middle| x = (2n+1)\frac{\pi}{2}, n \in Z\right\}$

d) $R - \left\{x \middle| x = n\pi, n \in Z\right\}$

e) $R - \left\{x \middle| -1 < x < 1\right\}$

Answer: b

12. The range of cotx is

a) [-1, 1]

b) R

c) R - $\left\{x \middle| x = (2n+1)\frac{\pi}{2}, n \in Z\right\}$

d) $R - \left\{x \middle| x = n\pi, n \in Z\right\}$

e) $R - \left\{x \middle| -1 < x < 1\right\}$

Answer: b

13. The range of secx is

a) [-1, 1]

b) R

c) R - $\left\{x \middle| x = (2n+1)\frac{\pi}{2}, n \in Z\right\}$

d) $R - \left\{x \middle| x = n\pi, n \in Z\right\}$

e) $R - \left\{x \middle| -1 < x < 1\right\}$

Answer: e

14. The range of csc x is

a) [-1, 1]

b) R

c) R - $\left\{x \middle| x = (2n+1)\frac{\pi}{2}, n \in Z\right\}$

d) $R - \left\{x \middle| x = n\pi, n \in Z\right\}$

e) $R - \left\{x \middle| -1 < x < 1\right\}$

Answer: e

15. A function f(x) is said to be the periodic function if, for all x in the domain of f, here exists a smallest positive number p such that f(x + p) =

a) f(p)
b) f(x)
c) 0
d) P
e) x + p

Answer: b

16. If, for all x in the domain of f, there exists a smallest positive number p such that f(x + p) = f(x), then p is the

a) period of f
b) period of 2f'
c) period of 3f
d) period of 4f
e) none of these

Answer: a

17. The period of sinx is

a) $\frac{\pi}{3}$

b) $\frac{\pi}{2}$

c) $\frac{2\pi}{3}$

d) π

e) 2π

Answer: e

18. The period of cosx is

a) $\frac{\pi}{3}$

b) $\frac{\pi}{2}$

c) $\frac{2\pi}{3}$

d) π
e) 2π

Answer: e

19. The period of tanx is

a) $\frac{\pi}{3}$
b) $\frac{\pi}{2}$
c) $\frac{2\pi}{3}$
d) π
e) 2π

Answer: d

20. The period of cotx is

a) $\frac{\pi}{3}$
b) $\frac{\pi}{2}$
c) $\frac{2\pi}{3}$
d) π
e) 2π

Answer: d

21. The period of sec x is

a) $\frac{\pi}{3}$
b) $\frac{\pi}{2}$
c) $\frac{2\pi}{3}$
d) π
e) 2π

Answer: e

22. The period of cosec x is

a) $\frac{\pi}{3}$
b) $\frac{\pi}{2}$
c) $\frac{2\pi}{3}$
d) π
e) 2π

Answer: e

23. The period of sin2x is

a) $\frac{\pi}{3}$
b) $\frac{\pi}{2}$
c) $\frac{2\pi}{3}$
d) π
e) 2π

Answer: d

24. The period of cos2x is

a) $\frac{\pi}{3}$
b) $\frac{\pi}{2}$
c) $\frac{2\pi}{3}$
d) π
e) 2π

Answer: d

25. The period of tan 2x is

a) $\frac{\pi}{3}$
b) $\frac{\pi}{2}$
c) $\frac{2\pi}{3}$
d) π
e) 2π

Answer: b

26. The period of cot2x is

a) $\frac{\pi}{3}$

b) $\frac{\pi}{2}$
c) $\frac{2\pi}{3}$
d) π
e) 2π

Answer: b

27. The period of sec2x is

a) $\frac{\pi}{3}$
b) $\frac{\pi}{2}$
c) $\frac{2\pi}{3}$
d) π
e) 2π

Answer: d

28. The period of cosec 2x is

a) $\frac{\pi}{3}$
b) $\frac{\pi}{2}$
c) $\frac{2\pi}{3}$
d) π
e) 2π

Answer: d

29. The period of sin3x is

a) $\frac{\pi}{3}$
b) $\frac{\pi}{2}$
c) $\frac{2\pi}{3}$
d) π
e) 2π

Answer: c

30. The period of cos7x is

a) $\frac{\pi}{3}$
b) $\frac{\pi}{2}$
c) $\frac{2\pi}{7}$
d) π
e) 2π

Answer: c

31. The period of cos $\frac{x}{3}$ is

a) π
b) 2π
c) 3π
d) 4π
e) 6π

Answer: e

32. The period of tan $\frac{x}{3}$ is

a) π
b) 2π
c) 3π
d) 4π
e) 6π

Answer: c

33. The period of cot $\frac{x}{3}$ is

a) π
b) 2π
c) 3π
d) 4π
e) 6π

Answer: c

34. The period of sec $\frac{x}{3}$ is

a) π
b) 2π
c) 3π
d) 4π

e) 6π

Answer: e

35. The period of cot3x is

a) $\frac{\pi}{3}$
b) $\frac{\pi}{2}$
c) $\frac{2\pi}{3}$
d) π
e) 2π

Answer: a

36. The period of tan 3x is

a) $\frac{\pi}{3}$
b) $\frac{\pi}{2}$
c) $\frac{2\pi}{3}$
d) π
e) 2π

Answer: a

37. The period of 3tan $\frac{x}{3}$ is

a) π
b) 2π
c) 3π
d) 4π
e) 6π

Answer: c

38. The period of 3sec $\frac{x}{3}$ is

a) π
b) 2π
c) 3π
d) 4π
e) 6π

Answer: e

39. The period of 15csc $\frac{x}{3}$ is

a) π
b) 2π
c) 3π
d) 4π
e) 6π

Answer: e

40. the period of 15csc $\frac{x}{5}$ is

a) 15π
b) 10π
c) 5π
d) 2π
e) π

Answer: b

Chapter – 12

Application of Trigonometry

1. How many important elements a triangle has……..

   a) 5
   b) 6
   c) -5
   d) 4
   e) None of these

Answer: b

2. The value of $\sin 38^o\ 24'$ is

   a) 37.4
   b) 0.6211
   c) 0.4234
   d) 0.3952
   e) None of these

Answer: b

3. Angle above the eye level
   a) Angle of elevation
   b) Angle of depression
   c) Constant angle
   d) Right angle
   e) Obtuse angle

Answer: a

4. a = 5429,c = 6294,b = ….

   a) 2142
   b) 3184
   c) 8413
   d) 1415
   e) None of these

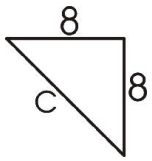
Answer: b

5. Angle below the eye level

   a) Angle of elevation
   b) Angle of depression
   c) Constant angle
   d) Right angle
   e) Obtuse angle

Answer: b

6. The value of c in the triangle is



   a) 128
   b) 64
   c) $c = \frac{\sqrt{2}}{2}$
   d) $c = 2\sqrt{2}$
   e) $c = 8\sqrt{2}$

Answer: e

7. The sum of the three angles of triangle is

   a) 360^o
   b) 073^o
   c) 225^o
   d) 180^o
   e) 90^o

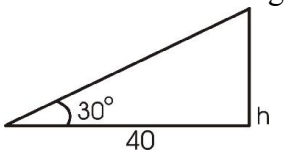
Answer: d)

8. A tree of 8m high has the shadow 6m in length, the angle of elevation of the sum at that moment is

   a) 0
   b) $53^o7'$
   c) 90^o
   d) 180^o
   e) 225^o

Answer: b)

9. the value of h in the given triangle is



   a) $\frac{40}{\sqrt{3}}$
   b) $\frac{\sqrt{3}}{40}$
   c) $\sqrt{3}$
   d) 40
   e) None of these

Answer: a)

10. The right angled triangle has one of its angles of measure

a) 360^o
b) 270^o
c) 225^o
d) 180^o
e) 90^o

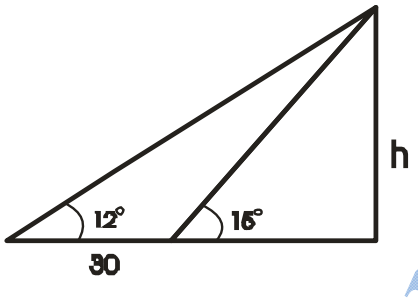
Answer: e)

11. At the top of a cliff 80m high, the angle of depression of a boat is 12^o. the distance of the boat from the cliff is

a) 100m
b) 255m
c) 377m
d) 477m
e) 733m

Answer: b)

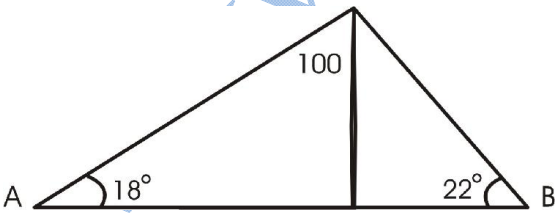
12. The value of h is



a) 15.3
b) 30.3
c) 60.3
d) 120.3
e) None of these

Answer: b)

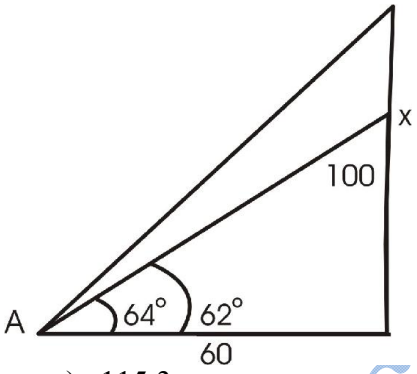
13. The value of h is



a) 111.2
b) 222.2
c) 555.2
d) 666.2
e) 777.2

Answer: c)

14. The value of x s



a) 115.3
b) 70.3
c) 60.3
d) $\frac{\sqrt{3}}{2}$
e) 10.2

Answer: e)

15. The law of sine is

a) $\frac{a}{\sin \propto}+\frac{b}{\sin \beta}+\frac{c}{\sin \gamma}$
b) $\frac{a}{\sin \propto}-\frac{b}{\sin \beta}-\frac{c}{\sin \gamma}$
c) $\frac{a}{\sin \propto}=\frac{b}{\sin \beta}=\frac{c}{\sin \gamma}$
d) $\frac{a}{\sin \propto}+\frac{b}{\sin \beta}-\frac{c}{\sin \gamma}$
e) None of these

Answer: e)

16. The law of sine is

a) $\frac{a}{\sin \propto}+\frac{b}{\sin \beta}+\frac{c}{\sin \gamma}$
b) $\frac{a}{\sin \propto}=\frac{b}{\sin \beta}=\frac{c}{\sin \gamma}$
c) $\frac{a}{\sin \propto}-\frac{b}{\sin \beta}-\frac{c}{\sin \gamma}$
d) $\frac{a}{\sin \propto}+\frac{b}{\sin \beta}-\frac{c}{\sin \gamma}$
e) None of these

Answer: b)

17. The law of cosine is

a) $a^2=b^2+c^2-2bc \quad \cos\alpha$

b) $a^2 = b^2 + c^2 + 2bc \quad \cos\alpha$

c) $a^2 = b^2 - c^2 - 2bc \quad \cos\alpha$

d) $a^2 = b^2 - c^2 + 2bc \quad \cos\alpha$

e) None of these

Answer: a)

18. The law of tangent is

a) $\frac{a-b}{a+b} = \frac{\tan\frac{1}{2}(\alpha+\beta)}{\tan\frac{1}{2}(\alpha-\beta)}$

b) $\frac{a+b}{a-b} = \frac{\tan\frac{1}{2}(\alpha+\beta)}{\tan\frac{1}{2}(\alpha-\beta)}$

c) $\frac{a+b}{a-b} = \frac{\tan(\alpha+\beta)}{\tan(\alpha-\beta)}$

d) $\frac{a-b}{a+b} = \frac{\tan(\alpha+\beta)}{\tan(\alpha-\beta)}$

e) None of these

Answer: b)

19. The law of tangent is

a) $\frac{c+a}{c-a} = \frac{\tan\frac{1}{2}(\gamma+\alpha)}{\tan\frac{1}{2}(\gamma-\alpha)}$

b) $\frac{c-a}{c+a} = \frac{\tan\frac{1}{2}(\gamma+\alpha)}{\tan\frac{1}{2}(\gamma-\alpha)}$

c) $\frac{c+a}{c-a} = \frac{\tan(\gamma+\alpha)}{\tan(\gamma-\alpha)}$

d) $\frac{c+a}{c-a} = \frac{\tan(\gamma+\alpha)}{\tan(\gamma-\alpha)}$

e) None of these

Answer: a)

20. if Δ is the area of a triangle ABC, then $\Delta =$

a) $\frac{c^2 \sin\alpha\beta \sin\gamma}{2\sin\beta}$

b) $\frac{c^2 \sin\alpha \sin\beta}{2\sin\gamma}$

c) $\frac{c^2 \sin\alpha}{2\sin\beta\sin\gamma}$

d) $\frac{b^2 \sin\beta\sin\gamma}{2\sin\alpha}$

e) $\frac{a^2 \sin\beta\sin\gamma}{2\sin\alpha}$

Answer: b)

21. The sides of a triangle are $x^2 + x + 1, 2x + 1$ and $x^2 - 1$, the greatest angle of the triangle is

a) 90^o

b) 110^o

c) 120^o

d) 150^o

e) 160^o

Answer: c)

22. if Δ is the area of a triangle ABC, then $\Delta =$

a) $\frac{c^2 \sin\beta\sin\gamma}{2\sin\beta}$

b) $-\frac{c^2 \sin\alpha\sin\beta}{2\sin\gamma}$

c) $\frac{c^2 \sin\alpha}{2\sin\beta\sin\gamma}$

d) $\frac{b^2 \sin\beta\sin\gamma}{2\sin\alpha}$

e) $\frac{a^2 \sin\beta\sin\gamma}{2\sin\alpha}$

Answer: e)

23. if Δ is the area of a triangle ABC, then $\Delta =$

a) $\frac{1}{2}bc \ \sin\beta$

b) $\frac{1}{2}ab \ \sin\alpha$

c) $\frac{1}{2}bc \ \sin\alpha$

d) $ab \ \sin\alpha$

e) $bc \ \sin\alpha$

Answer: c)

24. if Δ is the area of a triangle ABC, then $\Delta =$

a) $\frac{c^2 \sin\beta\sin\gamma}{2\sin\beta}$

b) $\frac{c^2 \sin\alpha \sin\beta}{2\sin\gamma}$

c) $\frac{c^2 \sin\alpha}{b^2 \sin\beta \sin\gamma}$

d) $\frac{b^2 \sin\beta \sin\gamma}{2\sin\alpha}$

e) $\frac{a^2 \sin\beta \sin\gamma}{2\sin\alpha}$

Answer: b)

25. if Δ is the area of a triangle ABC, then $\Delta =$

a) $\frac{1}{2}bc \ \sin\beta$

b) $\frac{1}{2}ab \ \sin\gamma$

c) $\frac{1}{2}bc \ \sin\alpha$

d) $ab \ \sin\alpha$

e) $bc \ \sin\alpha$

Answer: b)

26. if Δ is the area of a triangle ABC, then $\Delta =$

a) $\frac{1}{2}bc \ \sin\beta$

b) $\frac{1}{2}ac \ \sin\gamma$

c) $\frac{1}{2}bc \ \sin\alpha$

d) ab $\sin\alpha$

e) bc $\sin\alpha$

Answer: c)

27. if Δ is the area of a triangle ABC, then $\Delta =$

a) $\sqrt{s(s+a)(s-b)(s-c)}$

b) $\sqrt{s(s-a)(s+b)(s-c)}$

c) $\sqrt{s(s-a)(s-b)(s+c)}$

d) $\sqrt{s(s+a)(s+b)s+c)}$

e) $\sqrt{s(s-a)(s-b)s-c)}$

Answer: e)

28. if a, b, c are the sides of the triangle ABC, then s =

a) $\frac{a+b+c}{3}$

b) $\frac{a+b+c}{4}$

c) $\frac{a+b+c}{2}$

d) $a+b+c$

e) $a-b-c$

Answer: c)

29. The area of a triangle with b = 25.4, $\alpha = 45^\circ 17', \gamma = 36^\circ 41'$ is

a) 138.29 square units

b) 110 square units

c) 90 square units

d) 50 square units

e) 35 square units

Answer: a)

30. $r_1 =$

a) $\frac{\Delta}{s-b}$

b) $\frac{\Delta}{s-a}$

c) $\frac{\Delta}{s-c}$

d) $\frac{s-a}{\Delta}$

e) $\frac{\Delta}{s}$

Answer: b)

31. The area of a triangle with a = 300, b=120, $\gamma = 150^o$ is

a) 5000 square units

b) 6000 square units

c) 7000 square units

d) 9000 square units

Answer: e)

32. $r_1 =$

a) $s\Delta$

b) $\frac{1}{s\Delta}$

c) $\frac{s}{\Delta}$

d) $\frac{\Delta}{s}$

e) s

Answer: d)

33. $r_2 =$

a) $\frac{\Delta}{s-b}$

b) $\frac{\Delta}{s-a}$

c) $\frac{\Delta}{s-c}$

d) $\frac{s-a}{\Delta}$

e) $\frac{\Delta}{s}$

Answer: a)

34. $r_3 =$

a) $\frac{\Delta}{s-b}$

b) $\frac{\Delta}{s-a}$

c) $\frac{\Delta}{s-c}$

d) $\frac{s-a}{\Delta}$

e) $\frac{\Delta}{s}$

Answer: c)

35. $4R \cos\frac{1}{2}\alpha \sin\frac{1}{2}\beta \cos\frac{1}{2}\gamma =$

a) r_1

b) r_2

c) r_3

d) r

e) 0

Answer: b)

36. $4R \cos\frac{\alpha}{2} \cos\frac{\beta}{2} \sin\frac{\gamma}{2} =$

a) r_1

b) r_2

c) r_3

d) r

e) 0

Answer: c)

37. $4R \sin\frac{\alpha}{2} \sin\frac{\beta}{2} \sin\frac{\gamma}{2} =$

a) r_1

b) r_2

c) r_3

d) r

e) 0

Answer: d)

38. $r_1 =$

a) $s \tan\frac{\gamma}{2}$

b) $s \tan\frac{\beta}{2}$

c) $s \tan\frac{\alpha}{2}$

d) $s \tan\alpha$

e) $s \tan\beta$

Answer: c)

39. $r_2 =$

a) $s \tan\frac{\gamma}{2}$

b) $s \tan\frac{\beta}{2}$

c) $s \tan\frac{\alpha}{2}$

d) $s \tan\alpha$

e) $s \tan\beta$

Answer: b)

40. $\frac{1}{ab}+\frac{1}{bc}+\frac{1}{ca} =$

a) $\frac{R}{2r}$

b) $\frac{r}{2R}$

c) $\frac{1}{2rR}$

d) $\frac{1}{rs}$

e) None of these

Answer: c)

41. $r_3 =$

a) $s \tan \frac{\gamma}{2}$

b) $s \tan \frac{\beta}{2}$

c) $s \tan \frac{\alpha}{2}$

d) $s \tan \alpha$

e) $s \tan \beta$

Answer: a)

42. $4R \sin \frac{\alpha}{2} \cos \frac{\beta}{2} \cos \frac{\gamma}{2} =$

a) r_1

b) r_2

c) r_3

d) r

e) 0

Answer: a)

43. $r_1 r_2 + r_2 r_3 + r_3 r_1 =$

a) r_1^2

b) Δ^2

c) R^2

d) r^2

e) s^2

Answer: e)

44. $r^2 \cot \frac{\alpha}{2} \cot \frac{\beta}{2} \cot \frac{\gamma}{2} =$

a) s

b) Δ

c) R

d) r

e) r R

Answer: b)

45. $a \sin \frac{\beta}{2} \sin \frac{\gamma}{2} \sec \frac{\alpha}{2} =$

a) s

b) Δ

c) R

d) r

e) r R

Answer: d)

46. $r r_1 r_2 r_3 =$

a) r_1^2

b) Δ^2

c) R^2

d) r^2

e) s^2

Answer: b)

47. $b \sin \frac{\gamma}{2} \sin \frac{\alpha}{2} \sec \frac{\beta}{2} =$

a) s

b) Δ

c) R

d) R

e) rR

Answer: d)

48. if a = 13, b = 14, c = 15, then R =

a) 18

b) 14

c) 12

d) 10.5

e) 8.125

Answer: e)

49. if a = 13, b = 14, c = 15, then $r_2 =$

a) 18

b) 14

c) 12

d) 10.5

e) 8.125

Answer: c)

50. if a = 13, b = 14, c = 15, then $r_3 =$

a) 18

b) 14

c) 12

d) 10.5

e) 8.125

Answer: b)

51. $c \sin \frac{\alpha}{2} \sin \frac{\beta}{2} \sec \frac{\gamma}{2} =$

a) s

b) Δ

c) R

d) r
e) rR

Answer: d)

52. $r_1 + r_2 + r_3 - r =$

a) $4r_1$
b) 4Δ
c) $4s$
d) $4R$
e) 4r

Answer: d)

53. $r_1 r_2 r_3 =$

a) Rr^2
b) rR^2
c) Rs^2
d) rR^2
e) rs^2

Answer: e)

54. if a = 13, b = 14, c = 15, then $r_1 =$

a) 18
b) 14
c) 12
d) 10.5
e) 8.125

Answer: d)

55. $\cos\frac{\gamma}{2} =$

a) $\sqrt{\frac{s(s-c)}{ab}}$
b) $\sqrt{\frac{s(s-b)}{ac}}$
c) $\sqrt{\frac{s(s-a)}{bc}}$
d) $\sqrt{\frac{s(s-b)(s-c)}{bc}}$
e) $\sqrt{\frac{(s-c)(s-a)}{ac}}$

Answer: a)

56. $(r_1 + r_2)\ \tan\frac{1}{2}\gamma =$

a) c
b) Δ
c) R
d) a
e) b

Answer: a)

57. $abc\ (\sin\beta + \sin\gamma) =$

a) $4\Delta R$
b) $4\Delta s$
c) $4\Delta r$
d) 4rs
e) 4Rs

Answer: b)

58. $(r_1 + r_3)\tan\frac{1}{2}\beta =$

a) c
b) Δ
c) R
d) a
e) b

Answer: e)

59. $(r_2 + r_3)\tan\frac{1}{2}\alpha =$

a) c
b) Δ
c) R
d) a
e) b

Answer: d)

60. $\cos\frac{\alpha}{2} =$

a) $\sqrt{\frac{s(s-c)}{ab}}$
b) $\sqrt{\frac{s(s-b)}{ac}}$
c) $\sqrt{\frac{s(s-a)}{bc}}$
d) $\sqrt{\frac{s(s-b)(s-c)}{bc}}$
e) $\sqrt{\frac{s(s-c)(s-a)}{ac}}$

Answer: c)

61. $\cos\frac{\beta}{2}=$

a) $\sqrt{\frac{s(s-c)}{ab}}$

b) $\sqrt{\frac{s(s-b)}{ac}}$

c) $\sqrt{\frac{s(s-a)}{bc}}$

d) $\sqrt{\frac{s(s-b)(s-c)}{bc}}$

e) $\sqrt{\frac{s(s-c)(s-a)}{ac}}$

Answer: b)

62. $\sin\frac{\alpha}{2}=$

a) $\pm\sqrt{\frac{s(s-c)}{ab}}$

b) $\pm\sqrt{\frac{s(s-b)}{ac}}$

c) $\pm\sqrt{\frac{s(s-a)}{bc}}$

d) $\pm\sqrt{\frac{s(s-b)(s-c)}{bc}}$

e) $\pm\sqrt{\frac{s(s-c)(s-a)}{ac}}$

Answer: d)

63. $\sin\frac{\gamma}{2}=$

a) $\sqrt{\frac{s(s-c)}{ab}}$

b) $\sqrt{\frac{s(s-b)}{ac}}$

c) $\sqrt{\frac{s(s-b)(s-c)}{ac}}$

d) $\sqrt{\frac{(s-b)(s-c)}{bc}}$

e) $\pm\sqrt{\frac{(s-b)(s-a)}{ab}}$

Answer: e)

64. $\tan\frac{\alpha}{2}=$

a) $\sqrt{\frac{s(s-c)}{ab}}$

b) $\sqrt{\frac{s(s-b)}{ac}}$

c) $\sqrt{\frac{s(s-b)(s-c)}{s(s-a)}}$

d) $\sqrt{\frac{(s-b)(s-c)}{bc}}$

e) $\sqrt{\frac{(s-c)(s-a)}{ac}}$

Answer: c)

65. $\tan\frac{\beta}{2}=$

a) $\sqrt{\frac{s(s-c)}{ab}}$

b) $\sqrt{\frac{s(s-b)}{ac}}$

c) $\sqrt{\frac{s(s-a)}{bc}}$

d) $\sqrt{\frac{(s-b)(s-c)}{bc}}$

e) $\sqrt{\frac{(s-c)(s-a)}{ac}}$

Answer: e)

66. $\tan\frac{1}{2}\gamma=$

a) $\sqrt{\frac{s(s-c)}{ab}}$

b) $\sqrt{\frac{s(s-b)}{ac}}$

c) $\sqrt{\frac{s(s-a)}{bc}}$

d) $\sqrt{\frac{(s-b)(s-c)}{bc}}$

e) $\sqrt{\frac{(s-a)(s-b)}{s(s-c)}}$

Answer: e)

67. $\sin\frac{\beta}{2}=$

a) $\sqrt{\frac{s(s-c)}{ab}}$

b) $\sqrt{\frac{s(s-b)}{ac}}$

c) $\sqrt{\frac{s(s-a)}{bc}}$

d) $\sqrt{\frac{s(s-b)(s-c)}{bc}}$

e) $\sqrt{\frac{s(s-c)(s-a)}{ac}}$

Answer: e)

68. $\sec\frac{1}{2}\gamma=$

a) $\sqrt{\frac{ab}{s(s-c)}}$

b) $\sqrt{\frac{s(s-b)}{(s-a)(s-c)}}$

c) $\sqrt{\frac{s(s-c)}{(s-c)(s-a)}}$

d) $\sqrt{\frac{(s-b)(s-c)}{bc}}$

e) $\sqrt{\frac{(s-c)(s-a)}{ac}}$

Answer: a)

69. $\cot\frac{1}{2}\beta=$

a) $\sqrt{\frac{s(s-a)}{(s-b)(s-c)}}$

b) $\sqrt{\frac{s(s-b)}{(s-a)(s-c)}}$

c) $\sqrt{\frac{s(s-c)}{(s-c)(s-a)}}$

d) $\sqrt{\frac{(s-b)(s-c)}{bc}}$

e) $\sqrt{\frac{(s-c)(s-a)}{ac}}$

Answer: b)

70. $\sec\frac{\alpha}{2}=$

a) $\sqrt{\frac{s(s-a)}{(s-b)(s-c)}}$

b) $\sqrt{\frac{s(s-b)}{(s-a)(s-c)}}$

c) $\sqrt{\frac{bc}{s(s-a)}}$

d) $\sqrt{\frac{(s-b)(s-c)}{bc}}$

e) $\sqrt{\frac{(s-c)(s-a)}{ac}}$

Answer: c)

71. $\sec\frac{\beta}{2}=$

a) $\sqrt{\frac{s(s-a)}{(s-b)(s-c)}}$

b) $\sqrt{\frac{ac}{s(s-b)}}$

c) $\sqrt{\frac{s(s-b)}{(s-c)(s-a)}}$

d) $\sqrt{\frac{(s-b)(s-c)}{bc}}$

e) $\sqrt{\frac{(s-c)(s-a)}{ac}}$

Answer: b

72. $\cot\frac{1}{2}\gamma=$

a) $\sqrt{\frac{s(s-a)}{(s-b)(s-c)}}$

b) $\sqrt{\frac{s(s-b)}{(s-a)(s-c)}}$

c) $\sqrt{\frac{s(s-c)}{(s-b)(s-a)}}$

d) $\sqrt{\frac{(s-b)(s-c)}{bc}}$

e) $\sqrt{\frac{(s-c)(s-a)}{ac}}$

Answer: a)

73. $\operatorname{cst}\frac{\gamma}{2} =$

a) $\sqrt{\frac{s(s-a)}{(s-b)(s-c)}}$

b) $\sqrt{\frac{s(s-b)}{(s-a)(s-c)}}$

c) $\sqrt{\frac{s(s-c)}{(s-b)(s-a)}}$

d) $\sqrt{\frac{(s-b)(s-c)}{bc}}$

e) $\sqrt{\frac{(s-c)(s-a)}{ac}}$

Answer: c)

74. $\csc\frac{\gamma}{2} =$

a) $\sqrt{\frac{s(s-a)}{(s-b)(s-c)}}$

b) $\sqrt{\frac{s(s-b)}{(s-a)(s-c)}}$

c) $\sqrt{\frac{ab}{(s-a)(s-b)}}$

d) $\sqrt{\frac{(s-b)(s-c)}{bc}}$

e) $\sqrt{\frac{(s-c)(s-a)}{ac}}$

Answer: c)

75. $\csc\frac{\alpha}{2} =$

a) $\sqrt{\frac{bc}{(s-b)(s-c)}}$

b) $\sqrt{\frac{s(s-b)}{(s-a)(s-c)}}$

c) $\sqrt{\frac{s(s-c)}{(s-c)(s-a)}}$

d) $\sqrt{\frac{(s-b)(s-c)}{bc}}$

e) $\sqrt{\frac{(s-c)(s-a)}{ac}}$

Answer: a)

76. $\csc\frac{\beta}{2} =$

a) $\sqrt{\frac{ac}{(s-a)(s-c)}}$

b) $\sqrt{\frac{s(s-b)}{(s-a)(s-c)}}$

c) $\sqrt{\frac{s(s-c)}{(s-c)(c-a)}}$

d) $\sqrt{\frac{(s-b)(s-c)}{bc}}$

e) $\sqrt{\frac{(s-c)(s-a)}{ac}}$

Answer: a)

77. R=

a) $\frac{a}{2\sin\gamma}$

b) $\frac{a}{2\sin\beta}$

c) $\frac{c}{2\sin\alpha}$

d) $\frac{b}{2\sin\alpha}$

e) $\frac{a}{2\sin\alpha}$

Answer: e)

78. R =

a) $\frac{b}{2\sin\gamma}$

b) $\frac{a}{2\sin\beta}$

c) $\frac{c}{2\sin\alpha}$

d) $\frac{b}{2\sin\beta}$

e) $\frac{c}{2\sin\alpha}$

Answer: a)

79. R =

a) $\frac{b}{2\sin\gamma}$

b) $\frac{a}{2\sin\beta}$

c) $\frac{c}{2\sin\alpha}$

d) $\frac{b}{2\sin\beta}$

e) $\frac{c}{2\sin\alpha}$

Answer: d)

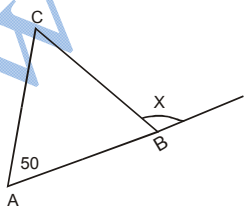
80. a circle drawn inside a triangle and touching its sides is called the
a) Circum circle
b) In circle
c) Escribed circle
d) Normal
e) None of these

Answer: b)

81. The circle passing thought three vertices of a triangle is called a …….
a) Circum circle
b) In circle
c) Escribed circle
d) Tangent
e) None of these

Answer: a)

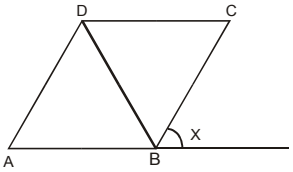
86) In the figure, AC = BC then ∠ X is



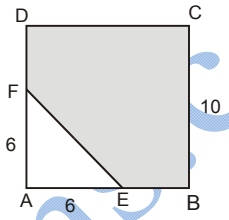
A) 100
B) 120
C) 130
D) 140

Answer: C

87) In figure ABCD is a parallelogram & AB = BD = DA Then angle X is



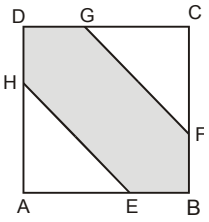
52) In figure ABCD is a square, then the shaded area is



A) 100
B) 90
C) 82
D) 72

Answer: C

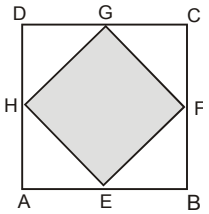
53) In figure ABCD is a square of side 8cm & E,F,G,H are the mid points of the sides then the shaded area is



A) 48 cm
B) 50 cm
C) 58 cm
D) 64 cm

Answer: A

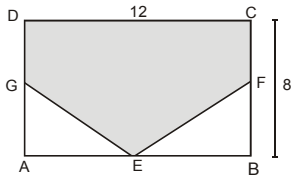
54) In figure ABCD is a square of side 12 cm & E, F, G, H are the mid points of the sides then the shaded area is



A) 144 cm
B) 72 cm
C) 48 cm
D) 36 cm

Answer: B

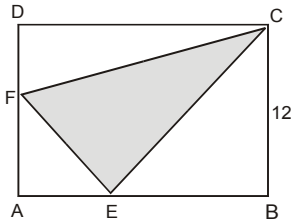
55) In figure ABCD is a rectangle & E, F, G are the mid points of the sides then the shaded area is



A) 96
B) 72
C) 40
D) 24

Answer: B

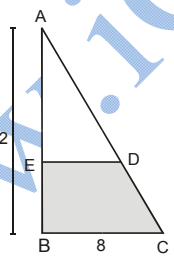
56) ABCD is square of side 12 & E, F are mid points of the sides AB & AD respectively then shaded area is



A) 90
B) 72
C) 54
D) 48

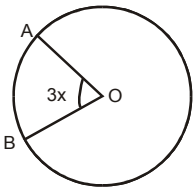
Answer: C

57) ABC is right triangle & D, E are mid points of sides AB & AC, then shaded area is



A) 48
B) 36
C) 12
D) 20

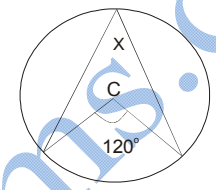
73) In the figure O is the center of the circle OA = AB then value of x is



A) 3
B) 2
C) 1
D) 1/3

Answer: D

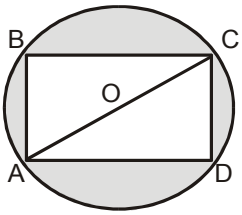
79) In the figure if c is the center of the circle then the ∠X =



A) 30^o
B) 50^o
C) 60^o
D) 70^o

Answer: C

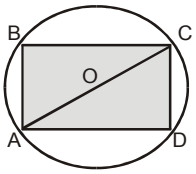
81) In the figure ABCD is a rectangle and O is the center of the circle. If AB = 3, BC = 4, then shaded area is



A) 25 π/4 – 6
B) 24π/4 – 12
C) 25π - 6
D) 25π - 12

Answer: B

82) In the figure ABCD is a rectangle and O is the center of the circle. If BC = 8, AC = 10 then shaded area is



A) 60
B) 48
C) 24
D) 16

Answer: B

Chapter – 13

Inverse Trigonometric functions

1. The inverse sine function is defined is by

a) $y = \sin^{-1} x$

b) $\dfrac{\sin^{-1} x}{4x}$

c) $\sin^{7} x$

d) $\cos^{2} x$

e) None of these

Answer: a)

2. $Cos^{-1}A + Cos^{-1}B =$

a) $Cos^{-1}\{AB + \sqrt{1-A^2}\sqrt{1-B^2}\}$

b) $Sin^{-1}\{A\sqrt{1-B^2}B\sqrt{1-A^2}\}$

c) $Cos^{-1}\{2A-1\}$

d) $Sin^{-1}\{A + \sqrt{1-B^2}B\sqrt{1-A^2}\}$

e) $Cos^{-1}\{AB - \sqrt{1-A^2}\sqrt{1-B^2}\}$

Answer: e)

3. $Sin^{-1}A + Sin^{-1}B =$

a) $Cos^{-1}\{AB + \sqrt{1-A^2}\sqrt{1-B^2}\}$

b) $Sin^{-1}\{A\sqrt{1-B^2}\sqrt{1-A^2}\}$

c) $Cos^{-1}\{2A^2-1\}$

d) $Sin^{-1}\{A - \sqrt{1-B^2}B\sqrt{1-A^2}\}$

e) $Cos^{-1}\{AB - \sqrt{1-A^2}\sqrt{1-B^2}\}$

Answer: b)

4. $Cos^{-1}A - Cos^{-1}B =$

a) $Cos^{-1}\{AB + \sqrt{1-A^2}\sqrt{1-B^2}\}$

b) $Sin^{-1}\{A\sqrt{1-B^2} + B\sqrt{1-A^2}\}$

c) $Cos^{-1}\{2A^2-1\}$

d) $Sin^{-1}\{A\sqrt{1-B^2} - B\sqrt{1-A^2}\}$

e) $Cos^{-1}\{AB - \sqrt{1-A^2}\sqrt{1-B^2}\}$

Answer: a)

5. $Sin^{-1}A - Sin^{-1}B =$

a) $Cos^{-1}\{AB + \sqrt{1-A^2}\sqrt{1-B^2}$

b) $Sin^{-1}\{A\sqrt{1-B^2} + B\sqrt{1-A^2}\}$

c) $Cos^{-1}\{2A^2-1\}$

d) $Sin^{-1}\{A\sqrt{1-B^2} - B\sqrt{1-A^2}$

e) $Cos^{-1}\{AB - \sqrt{1-A^2}\sqrt{1-B^2}$

Answer: d)

6. $Sin^{-1}\{2A\sqrt{1-A^2} =$

a) $Sin^{-1}\{2A\sqrt{1-A^2} =$

b) $Sin^{-1}\{A\sqrt{A^2-2}\}$

c) $Cos^{-1}\{2A^2-1\}$

d) $Cos^{-1}\{A^2-2\}$

e) $2Sin^{-1}A$

Answer: e)

7. $2Cos^{-1}A$

a) $Sin^{-1}\{2A^2-1\}$

b) $Sin^{-1}\{2A^2-2\}$

c) $Con^{-1}\{2A^2-1\}$

d) $Cos^{-1}\{A^2-2\}$

e) $Cos^{-1}\{AB\sqrt{1-A^2}\sqrt{1-B^2}\}$

Answer: c)

8. $Tan^{-1}\left(\dfrac{2A}{1-A^2}\right) =$

a) $Tan^{-1}\left(\dfrac{A}{2}\right)$

b) $Tan^{-1}\left(\dfrac{2}{A}\right)$

c) $Tan^{-1}A$

d) $Tan^{-1}2A$

e) $2Tan^{-1}A$

Answer: e)

9. $Tan^{-1}A + Tan^{-1}B + Tan^{-1}C =$

a) $Tan^{-1}\left(\dfrac{A-B}{1+AB}\right)$

b) $Tan^{-1}\left(\dfrac{A-B}{1-AB}\right)$

c) $Tan^{-1}\left(\dfrac{1-AB-BC-CA}{A+B+C-ABC}\right)$

d) $Tan^{-1}\left(\frac{A+B+c-ABC}{1-Ab-BC-CA}\right)$

e) $Tan^{-1}(A+B+C)$

Answer: d)

10. $Tan^{-1}A - Tan^{-1}B =$

a) $Tan^{-1}\left(\frac{A-B}{1+AB}\right)$

b) $Tan^{-1}\left(\frac{A+B}{1-AB}\right)$

c) $Tan^{-1}\left(\frac{A+AB}{A-B}\right)$

d) $Tan^{-1}\left(\frac{1-AB}{A+B}\right)$

e) $Cos^{-1}\{AB-\sqrt{1-A^2}\sqrt{1-B^2}\}$

Answer: a)

11. $Tan^{-1}A + Tan^{-1}B =$

a) $Tan^{-1}\left(\frac{A-B}{1+AB}\right)$

b) $Tan^{-1}\left(\frac{A+B}{1-AB}\right)$

c) $Tan^{-1}\left(\frac{1+A^2B^2}{A-B}\right)$

d) $Tan^{-1}\left(\frac{1-AB}{A+B}\right)$

e) $Cos^{-1}\{AB-\sqrt{1-A^2}\sqrt{1-B^2}\}$

Answer: d)

12. $Tan^{-1}\left(\frac{x-1}{x-2}\right)+Tan^{-1}\left(\frac{x+1}{x+2}\right)=$

a) $Tan^{-1}\left(\frac{2x^2-3}{2x^2-4}\right)$

b) $Tan^{-1}\left(\frac{2x^2-4}{2x^2-3}\right)$

c) $Tan^{-1}\left(\frac{2x^2+3}{2x^2+4}\right)$

d) $Tan^{-1}\left(\frac{2x^2+4}{2x^2+3}\right)$

e) None of these

Answer: b)

13. $Tan^2A + Tan^{-1}\left(\frac{1-A}{1+A}\right)=$

a) $\frac{1}{6}\pi$

b) $\frac{1}{4}\pi$

c) $\frac{1}{2}\pi$

d) π

e) 2π

Answer: b)

14. $Tan^{-1}\frac{1}{7} - Tan^{-1}\frac{1}{13}=$

a) $Tan^{-1}\frac{2}{9}$

b) $Tan^{-1}\frac{9}{2}$

c) $Tan^{-1}\frac{3}{46}$

d) $Tan^{-1}7$

e) $Tan^{-1}13$

Answer: c)

15. $Tan^{-1}\frac{1}{2}+Tan^{-1}\frac{1}{3}=$

a) $\frac{\pi}{6}$

b) $\frac{\pi}{4}$

c) $\frac{\pi}{2}$

d) π

e) 2π

Answer: c)

16. $Tan^{-1}\frac{1}{3}A + Tan^{-1}\frac{1}{5}+Tan^{-1}\frac{1}{7}+Tan^{-1}\frac{1}{8}=$

a) $\frac{1}{6}\pi$

b) $\frac{1}{4}\pi$

c) $\frac{1}{2}\pi$

d) π

e) 2π

Answer: b)

17. $Tan^{-1}\frac{1}{7}+Tan^{-1}\frac{1}{13}=$

a) $Tan^{-1}\frac{2}{9}$

b) $Tan^{-1}\frac{9}{2}$

c) $Tan^{-1}\frac{3}{46}$

d) $Tan^{-1}7$

e) $Tan^{-1}13$

Answer: a)

18. $Tan^{-1}\left(\frac{3A-A^3}{1-3A^2}\right)=$

a) $2\,Tan^{-1}A$

b) $Tan^{-1}2A$

c) $3Tan^{-1}A$

d) $Tan^{-1}3A$

e) $Tan^{-1}A$

Answer: c)

19. $Sin^{-1}(\frac{-1}{2})=.....$

a) $\frac{\pi}{4}$

b) $\frac{-\pi}{6}$

c) $\frac{2\pi}{3}$

d) -180°

e) None of these

Answer: b)

20. y = cosec x where $\frac{-\pi}{2}<y<\frac{\pi}{2} and x\neq 0$ is called the ……..

a) simple sine

b) principal cosecant

c) odd

d) even

e) none of these

Answer: b)

21. $Tan^{-1}\frac{1}{x}=?$

a) $\sec^{-1}\frac{1}{x}$

b) $\frac{\sin^{-1}x}{\cos^{-1}x}$

c) $\cot^{-1}x$

d) $\sec^{-1}(-x)$

e) None of these

Answer: c)

22. $\cos ec^{-1}x=?$

a) $\sec^{-1}\left(\frac{1}{x}\right)$

b) $\cos^{-1}\left(\frac{1}{x}\right)$

c) $\frac{1}{\cos^{-1}x}$

d) $\sin^{-1}x$

e) None of these

Answer: a)

23. $Sin^{-1}x=?$

a) $\sin^{-1}(-x)$

b) $\frac{1}{\tan^{-1}(x)}$

c) $\sin^{-1}\frac{1}{x}$

d) $\frac{\pi}{2}-\cos^{-1}x$

e) None of these

Answer: d)

24. $\cot^{-1}\left(\frac{1}{x}\right)$

a) $\sin^{-1}\left(\frac{1}{x}\right)$

b) $\cos^{-1}\left(\frac{1}{x}\right)$

c) $\tan^{-1}\left(\frac{1}{x}\right)$

d) None of these

Answer: c)

25. $\sec^{-1} x = ?$

a) $\cos^{-1}\left(\frac{1}{x}\right)$

b) $\sin^{-1}\frac{1}{x}$

c) $\cos^{-1}(-x)$

d) None of these

Answer: a)

26. $\cos(\sin^{-1} x) = ?$

a) $\frac{x}{\sqrt{1+x^2}}$

b) $\pm\sqrt{1+x^2}$ s

c) $\frac{1}{1+x^2}$

d) $\frac{x}{\sqrt{1-x^2}}$

e) None of these

Answer: d)

27. $\sin^{-1} x + \cos^{-1} x = ?$

a) 0

b) -1

c) $\frac{\pi}{2}$

d) None of these

Answer: c)

28. $\tan(\pi + \tan^{-1} x) = ?$

a) –x

b) X

c) Tan x

d) $\sqrt{1+x^2}$

Answer: b)

29. $\tan^{-1}\left(\frac{\sqrt{1-x^2}}{x}\right)$

a) $Con^{-1}x$

b) $\sin^{-1} x$

c) $\tan^{-1} x$

d) $\cot^{-1} x$

e) None of these

Answer: a)

30. $\tan^{-1} x - \tan^{-1} y =$ _____

a) $\tan^{-1}\left(\frac{x-y}{1+xy}\right)$

b) $\tan^{-1}\left(\frac{x+y}{1+xy}\right)$

c) $\tan^{-1}\left(\frac{x+y}{1-xy}\right)$

d) $\tan^{-1}\left(\frac{x-y}{1-xy}\right)$

e) None of these

Answer: a)

31. $\cos^{-1} x + \cos^{-1} y =$ _____

a) $Cos^{-1}\left(xy - \sqrt{1+x^2}\sqrt{1-y^2}\right)$

b) $Cos^{-1}\left(xy - \sqrt{1-x^2}\sqrt{1-y^2}\right)$

c) $Cos^{-1}\left(xy + \sqrt{1+x^2}\sqrt{1-y^2}\right)$

d) $Cos^{-1}\left(xy + \sqrt{1+x^2}\sqrt{1+y^2}\right)$

e) None of these

Answer: b)

32. $\tan(\sin^{-1} x) = ?$

a) $\sqrt{1+x^2}$

b) $\frac{1}{1+x^2}$

c) $\frac{x}{\sqrt{1-x^2}}$

d) None of these

Answer: c)

33. $\sin^{-1} x + \sin^{-1} y = ?$

a) $\sin^{-1}(x\sqrt{1-x^2} - y\sqrt{1-y^2})$

b) $\sin^{-1}(x\sqrt{1-y^2} - y\sqrt{1-x^2})$

c) $\sin^{-1}(x\sqrt{1-y^2} - y\sqrt{1-x^2})$

d) $\sin^{-1}(x\sqrt{1-y^2} - y\sqrt{1-x^2})$

e) None of these

Answer: d)

Chapter 2 DIFFERENTIATION

1) Let f be a real value function and x ∈ D_f then the limit $Lim_{h\to 0} \frac{f(x+h)-f(x)}{h}$ when it exists is called

A) The derivative of f at a
B) The derivative of f at h
C) The derivative of f at x
D) The derivative of f at x = h

Answer: C

2) The value of the limit $Lim_{x\to a} \frac{x^7 - a^7}{x-a}$ is equal to

A) 0
B) 0/0
C) $7a^7$
D) $7a^6$

Answer: D

3) The derivative of $\frac{ax+b}{cx+d}$ w.r.t $\frac{ax+b}{cx+d}$ is

A) $\frac{b}{(cx+d)^2}$
B) $\frac{a}{(cx+d)^2}$
C) 1
D) 0

Answer: C

4) The slope of the tangent to the curve $y = x^3 + 5$ at the point (1, 2) is

A) 6
B) 2
C) 5
D) 3

Answer: D

5) If a particle thrown vertically upward move according to the law, $x = 32t - 16t^2$ (x in ft, t in sec) then the height attained by the particle when the velocity is zero is

A) 0
B) 32t
C) 16ft
D) 2ft

Answer: C

6) If a particle moves according to the law x = 16 t – 4 then acceleration at time t = 20 is

A) 6
B) 0
C) 116
D) 4

Answer: B

7) If a particle moves according to the law $x = e^t$ then velocity at time t = 0 is

A) 0
B) 1
C) e
D) none of these

Answer: B

8) If x = 2t, $y = t^2$ then $\frac{dy}{dx}$ is equal to

A) 4t
B) 2
C) t
D) 4

Answer: C

4. Differentiation of Trigonometric, Logarithmic and Exponential Function

1) The derivative of sin (a + b) w.r.t x is

A) cos (a + b)
B) – cos (a + b)
C) cos (a – b)
D) 0

Answer: D

2) The derivative of x sina w.r.t x is

A) cos a
B) x cos a + sin a
C) – x cos a + sin a
D) sin a

Answer: D

3) The derivative of $\frac{x+a}{\sin a}$ w.r.t x is

A) $\frac{\sin a - (x+a)\cos a}{(\sin a)^2}$
B) $\frac{\sin a - \cos a}{\sin^2 a}$
C) $\frac{\sin a - x - a}{\sin^2 a}$
D) $\frac{1}{\sin a}$

Answer: D

4) The derivative of $\frac{\sin a}{\cos a}$ w.r.t xis

A) $\sec^2 (ax + b)$

B) $\frac{\cos a}{\sin a}$

C) $\frac{-\cos a}{\sin a}$

D) 0

Answer: D

5) The derivative of tan (ax + b) w.r.t tan (ax + b) is

A) $\sec^2 (ax + b)$
B) $a \sec^2 (ax + b)$
C) $b \sec^2 (ax + b)$
D) 1

Answer: D

6) If $x = 2\cos^7\theta$, $y = 4\sin^7\theta$ then dy/dx is equal to

A) $4\tan^7\theta$
B) $-4\tan^7\theta$
C) $4\tan^5\theta$
D) $-2\tan^5\theta$

Answer: D

7) The derivative of $(\sec^{-1} x + \text{cosec}^{-1}x)$ is equal to

A) $\frac{1}{x\sqrt{x^2-1}}$

B) $\frac{1}{1+a^2}$

C) 0

D) $\frac{1}{\sqrt{x^2-1}} - \frac{1}{\sqrt{x^2+1}}$

Answer: C

8) The derivative of $\text{Sin}^{-1}a + \text{Tan}^{-1}a$ w.r.t x is equal to

A) $\frac{1}{\sqrt{1-a^2}}$

B) $\frac{1}{1+a^2}$

C) $\frac{1}{\sqrt{1-a^2}} + \frac{1}{1+a^2}$

D) 0

Answer: D

9) The value of e as sum of the series is

A) $1+\frac{1}{2}+\frac{1}{3}+.....$

B) $1+2+\frac{1}{3}+.....$

C) $1+\frac{1}{1!}+\frac{1}{2!}+\frac{1}{3!}.....$

D) $1+\frac{1}{2}+\frac{1}{3}+\frac{1}{4}.....$

Answer: C

10) The base of the natural logarithmic function is

A) 10
B) 2
C) e
D) none of these

Answer: C

11) The natural exponential function is defined by the equation

A) $y = a^x$
B) $y = 2^x$
C) $y = e^x$
D) $y = 3^x$

Answer: C

12) The derivative of sin (sin a) w.r.t x is

A) cos (sina)
B) cos (sina) cosa
C) cos (cosa)
D) 0

Answer: D

13) If $a^y = x$ then the value of y is

A) ax
B) $\log_a x$
C) x/a
D) a/x

Answer: B

14) If $\frac{y}{x} = Tan^{-1}\frac{x}{y}$ then $\frac{dy}{dx}$ is

A) xy

B) $\frac{1}{x^2+y^2}$

C) $\frac{1}{1+y^2}$

D) $\frac{y}{x}$

Answer: D

15) The derivative of exp (sinx) is

A) exp (cosx)
B) sinx exp(cosx)
C) (cosx) exp (sinx)
D) cosx exp (cosx)

Answer: C

16) The derivative of e^2 w.r.to x is

A) 2e
B) 2
C) 1
D) 0

Answer: D

17) The derivative of X^x is

A) X^{x-1}
B) $X.X^{x-1}$
C) $X^x (1+l_n x)$
D) $X^x l_n x$

Answer: C

18) If δx or dx is quite small then the difference between dy and δy will be

A) very large
B) large
C) small
D) negligible

Answer: D

19) If radius of a circular disc is unity then its area will be

A) $\pi\chi^2$
B) $2\pi\chi$
C) π
D) 2π

Answer: C

20) the derivative of the function f(x) = sinx + sinx + ... Up to 9 times, is

A) cosx + cosx + cosx
B) 9 cosx
C) 9 sin x
D) 3 cos x

Answer: B

21) If $x = \cos^2\theta$, $y = 4\sin^2\theta$ then $\frac{dy}{dx}$ is equal to

A) – 2
B) 2
C) – 4
D) 4

Answer: A

22) The derivative of the function $f(x) = \frac{1}{\cos ecx}$ is

A) $Sec^2 45^o Cosx$
B) $Sec^2 45^o Sinx$
C) $-Cosec^2 45^o Cotx$
D) Cosx

Answer: D

23) The derivative of the function y = tanx is

A) $tanx\ sec^2 45^o + sec^2 x \tan 45^o$
B) $sec^2 x\ sec^2 45^o$
C) $Sec^2 45^o$
D) $Sec^2 x$

Answer: D

24) A particle thrown vertically upward, moves according to the law, $x = 32 - 16t^2$ (x in ft, t in sec) then the maximum height attained by the particle is

A) 32ft
B) 16ft
C) 48ft
D) 2ft

Answer: B

25) If in a function $y = x^2 - 2x$, x = 4, increment in x = 0.5 then the value of differential of the dependent variable is

A) 4.5
B) 3.5
C) 3
D) 2.5

Answer: C

Higher order Derivatives Maxima and Minima

1) If $y = e^{2x}$ the y_9 is
A) e^{2x}
B) 2^9
C) $2^9 e^{2x}$
D) $2^8 e^{2x}$

2) In the interval $(-\infty, \infty)$ the function defined by the equation $y = x^3$ is
A) increasing
B) decreasing
C) constant
D) even

3) The origin for the function $y = x^3$ is a point of
A) Maxima
B) Minima
C) Inflexion
D) Absolute Maxima

4) If f' (c) exists then f (c) is a maximum or minimum value of f, only if
A) f'(c) > 0
B) f'(c) < 0
C) f'(c) = 0
D) f'(c) = 1

5) If f'(c) < 0 for every c ∈ (a, b) then in (a, b) f is
A) increasing
B) decreasing
C) constant
D) zero

6) A function f will have a minimum value at x = a, if f' (a) = 0 and f'' (a) is

A) + ve
B) – ve
C) 0
D) ∞

7) The function $f(x) = x^2$ increases in the interval
A) [1, 5]
B) [- 1, 5]
C) [- 5, 1]
D) [-5, - 1]

8) The function $f(x) = 1 - x^2$ increases in the interval
A) (- 5, 1)
B) (-5, 2)
C) (–5, 3)
D) (-5, -1)

9) The function $f(x) = 1 - x^3$ decreases in the interval
A) (-1, 1)
B) (-2, 2)
C) (-3, 3)
D) All A, B and C are true

10) In the interval (-2, 3) the function $f(x) = x^2$ is
A) increasing
B) decreasing
C) neither increasing nor decreasing
D) maximum

11) The function $f(x) = \frac{2}{x}$ is decreasing in the interval
A) (0, 2)
B) (0, 3)
C) (0, 4)
D) All A, B, C are true

12) The function $f(x) = x^3 - 1$ is increasing in the interval
A) (-5, -1)
B) (-5, 1)
C) (-5, 5)
D) All A, B, C are true

13) The function $f(x) = 1 - x^3$ has a point of inflexion at
A) origin
B) x = 2
C) x = - 1
D) x = 1

14) The function $f(x) = x^2 - 3x + 2$ has a minima at
A) x = 1
B) x = 3/2
C) x = 3
D) x = 2

15) The function $f(x) = \frac{x^3}{3} - \frac{3x^2}{2} + 2x$ has minima at
A) x = 0
B) x = 1
C) x = -1
D) x = 2

16) In the interval $(0, \frac{\pi}{2})$ the function f(x) = cosx is
A) increasing
B) decreasing
C) neither increasing nor decreasing
D) constant

17) The function $f(x) = 3x^2 - 4x + 5$ has a minima at
A) x = 2/3
B) x = 2
C) x = 3
D) x = - 2

18) The function $f(x) = 5x^2 - 6x + 2$ has a minima at
A) x = 3
B) x = 5
C) x = 3/5
D) x = - 3/5

19) In the interval (0, π) the function sinx has a maxima at the point
A) x = 0
B) x = π/2
C) x = π
D) x = π/4

20) In the interval (0, π) the function f(x) = sin x has a minimum value at the point
A) x = 0
B) x = π/2
C) x = π/4
D) x = π

21) In the interval $[-\frac{\pi}{2}, \frac{\pi}{2}]$ the function f(x) = cos x has a maxima at
A) x = π/2
B) x = - π/2
C) x = 0
D) x = π/4

22) The function f(x) = sin x decreases in the interval
A) $\left(0, \frac{\pi}{2}\right)$
B) $\left(\pi, \frac{3\pi}{2}\right)$
C) $\left(\frac{3\pi}{2}, 2\pi\right)$
D) $\left(0, \frac{\pi}{2}\right)$

23) The function f(x) = cos x increases in the interval
A) $\left(0, \frac{\pi}{2}\right)$
B) $\left(\frac{\pi}{2}, \pi\right)$
C) $\left(\frac{\pi}{2}, \frac{2\pi}{3}\right)$
D) $\left(\frac{3\pi}{2}, 2\pi\right)$

24) The function f(x) = tan x increases in the interval
A) $\left(0, \frac{\pi}{2}\right)$

B) $\left(\frac{\pi}{2}, \pi\right)$

C) $\left(\pi, \frac{3\pi}{2}\right)$

D) All A, B, C is true

25) The function f(x) = cot x decreases in the interval

A) $\left(0, \frac{\pi}{2}\right)$

B) $\left(\frac{\pi}{2}, \pi\right)$

C) $\left(\pi, \frac{3\pi}{2}\right)$

D) All A, B, C are true

26) The function f(x) = sec x increases in the interval

A) $\left(\frac{\pi}{2}, \pi\right)$

B) $\left(\pi, \frac{3\pi}{2}\right)$

C) $\left(\frac{3\pi}{2}, 2\pi\right)$

D) $\left(\pi, \frac{5\pi}{4}\right)$

27) The function f(x) = sec x decreases in the interval

A) $\left(0, \frac{\pi}{2}\right)$

B) $\left(\frac{\pi}{2}, \pi\right)$

C) $\left(\pi, \frac{3\pi}{2}\right)$

D) $\left(0, \frac{\pi}{3}\right)$

28) The function cosec x increases in the interval

A) $\left(0, \frac{\pi}{2}\right)$

B) $\left(\pi, \frac{3\pi}{2}\right)$

C) $\left(\frac{3\pi}{2}, 2\pi\right)$

D) $\left(0, \frac{\pi}{4}\right)$

29) The function cosec x decreases in the interval

A) $\left(\frac{\pi}{2}, \pi\right)$

B) $\left(\pi, \frac{3\pi}{2}\right)$

C) $\left(\frac{3\pi}{2}, 2\pi\right)$

D) $\left(\frac{\pi}{2}, \frac{2\pi}{3}\right)$

30) Two positive real numbers, whose sum is 40 and whose product is a maximum are

A) 30, 10

B) 25, 15

C) 20, 20

D) 19, 21

Chapter 2 SETS, FUNCTIONS AND GROUPS

1) If $x \in L \cup M$, then

A) $x \notin L$ or $x \notin M$
B) $x \notin L$ or $x \in M$
C) $x \in L$ or $x \notin M$
D) $x \in L$ or $x \in M$

Answer: D

2) Let A = {a, b, c, d} B = {b, c, d} then $A \cap B$ =

A) {b, c, d}
B) {a, b, c}
C) {a, b, c, d}
D) {a, c, d}

Answer: A

3) If $x \in B' = U - B$ then

A) $x \in B$ and $x \in U$
B) $x \notin B$ and $x \in U$
C) $x \notin B$ and $x \notin U$
D) $x \in B$ and $x \notin U$

Answer: B

4) Let A = (1, 2, 3, 4, 5 …..}, B = {2, 4, 6, 8 ….}
The $A \cup B$ is

A) {1, 2, 3}
B) {1, 2, 3, 4, 5, …..}
C) {2, 4, 6, 8, …..}
D) {6, 7, 8, 9}

Answer: B

5) $L \cup M = L \cap M$ then L is equal to

A) M
B) L
C) ϕ
D) M'

Answer: A

6) Which of the following sets has only one subset.

A) {Y, Z}
B) {Y}
C) {0}
D) { }

Answer: D

7) $A \subseteq B$ then

A) $A \cap B = A$
B) $A \cap B' = A$
C) $A - B = A$
D) $A - B = B$

Answer: A

8) If $x \in L - M$ then

A) $x \in L$ and $x \in M$
B) $x \in L$ and $x \notin M$
C) $x \notin L$ and $x \in M$
D) $x \notin L$ and $x \notin M$

Answer: B

9) Total number of subsets that can be formed from the set {x, y, z} is

A) 1
B) 2
C) 5
D) 8

Answer: D

10) If $x \in L \cap M$ then

A) $x \in L$ and $x \in M$
B) $x \in L$ and $x \notin M$
C) $x \notin L$ and $x \in M$
D) $x \notin L$ and $x \notin M$

Answer: A

11) Let A and B be any none empty sets then $A \cup (A \cap B)$ is

A) $B \cap A$
B) A
C) B
D) $A \cup B$

Answer: B

12) Let A, B, C be any sets. Let $A \cup B = A \cup C$ and $A \cap B = A \cap C$, then B set is equal to

A) $A \cup B$
B) $A \cap B$
C) A
D) C

Answer: D

13) If S contains n elements then power set of S, P (s) contains elements. Which are?

A) 2^n
B) 4^n
C) 5^n
D) 6^n

Answer: A

14) A set is a collection of objects which are

A) well defined
B) well defined and distinct
C) identical
D) not defined

Answer: B

15) The power set of a set S containing six numbers is the set whose elements are

A) three subsets of S
B) two subsets of S
C) five subsets of S
D) all possible subsets of S

Answer: D

16) A is a subset of B if

A) Every element of A $\in$ B
B) Some element of A $\in$ B
C) Every element of A $\notin$ B
D) Every element of B $\in$ A

Answer: A

17) The complement of set A relative to universal set U is the set

A) $\{x/x \in U \text{ and } x \in A\}$
B) $\{x/x \notin U \text{ and } x \notin A\}$
C) $\{x/x \notin U \text{ and } x \in A\}$
D) $\{x/x \in U \text{ and } x \notin A\}$

Answer: D

18) If A \ B = A then

A) $A \cap B = A$
B) $A \cap B = A'$
C) $A \cap B = B$
D) $A \cap B = \phi$

Answer: D

19) If B – A = B then

A) $A \cap B = \phi$
B) $A \cap B = A$
C) $A \cap B \neq \phi$
D) $A \cap B = B$

Answer: A

20) The union of the sets A and B is defined as

A) $A \cup B = \{x/x \in A \text{ or } x \in B\}$
B) $A \cup B = \{x/x \notin A \text{ or } x \in B\}$
C) $A \cup B = \{x/x \notin A \text{ or } x \notin B\}$
D) $A \cup B = \{x/x \in A \text{ or } x \notin B\}$

Answer: A

21) If Q, R are any sets then Q – R =

A) $Q - (Q \cap R)$
B) $Q \cap (Q - R)$
C) $Q + (Q \cap R)$
D) $Q - (Q \cup R)$

Answer: A

22) If A and B are any two sets and A′ B′ are Their compliments relative to the universal set U, the $(A \cup B)' =$

A) $A' \cup B'$
B) $A \cup B$
C) $A' \cap B'$
D) $A \cap B$

Answer: C

23) Difference between two sets A\B is defined as

A) $\{x/x \in A \wedge x \in B\}$
B) $\{x/x \in A \wedge x \notin B\}$
C) $\{x/x \notin A \wedge x \in B\}$
D) $\{x/x \notin A \wedge x \notin B\}$

Answer: B

24) For union Associative Law is

A) $(A \cup B) \cup C = A \cup (B \cup C)$
B) $(A \cup B) \cup C = A \cap (B \cap C)$
C) $(A \cap B) \cup C = A \cup (B \cup C)$
D) $(A \cup B) \cup C = A - (B - C)$

Answer: A

25) The set of odd numbers between 1 and 9 is

A) {1, 3, 5, 7}
B) {3, 5, 7, 9}
C) {1, 3, 5, 7, 9}
D) {3, 5, 7}

Answer: D

26) The set of rational numbers between 5 and 9 is

A) Finite
B) Infinite
C) {5, 6, 7, 8, 9}
D) {6, 7, 8}

Answer: B

27) If x is a set having 6 elements then the numbers in P(x) is:

A) 6^2
B) 6
C) 6(2)
D) 2^6

Answer: D

28) If $B \subseteq A$ then A′ is subset of

A) A
B) B
C) B′
D) $A \cup B$

Answer: C

29) The set $A \cap (A \cup B) =$

A) A
B) B
C) $A \cup B$
D) None of these

Answer: A

30) The set $A \cup (A \cap B) =$

A) B
B) A

C) $A \cup B$
D) None of these
Answer: B

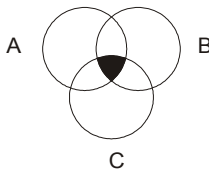
31) If A and B are any two sets and A′, B′ are their complements relative to the universal set U, then
$(A \cap B)' =$

A) $A' \cup B'$
B) $A' \cap B'$
C) $A' \cup B$
D) $A \cap B'$
Answer: A

32) If $A \subseteq U$ then A′ relative to U is equal to

A) A – B
B) B – A
C) U – A
D) A – U
Answer: C

33) The shaded area in the figure represents the set

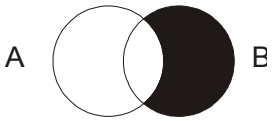


A) $A \cap E \cap C$
B) $A \cup E \cup C$
C) $A \cup E \cap C$
D) $A \cap E \cup C$
Answer: A

34) The shaded area in the figure represents the set:

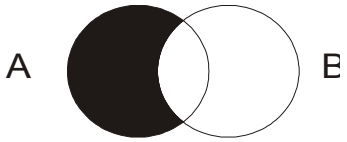
A) $A \cup E$
B) $A \cap E$
C) A – E
D) E – A
Answer: B

35) The shade area in the figure represents the set:



A) $A \cup E$
B) $A \cap E$
C) A – E
D) E – A
Answer: D

36) The shaded area in the figure represents the set:



A) $A \cup E$
B) $A \cap E$
C) A – E
D) E – A
Answer: C

37) Well defined collection of distinct objects is called a _____

A) a function
B) a set
C) a real number
D) none
Answer: B

38) A diagram which represents a set is called _____ diagram.

A) Venn's
B) Argand
C) Plane
D) None
Answer: A

39) If a set A is the subset of B & $A \neq B$, then A _____ of B.

A) Proper subset
B) Improper subset
C) None D) None
Answer: A

40) Every set is the _____ of itself.

A) proper subset
B) improper subset
C) super set
D) none
Answer: B

41) The set of real Nos. (points) belonging to interval (a, b) is _____

A) finite set
B) empty set
C) singleton set
D) infinite set
Answer: D

42) The power set of an empty set is _____

A) null set
B) singleton set
C) super set
D) none

Answer: B

43) $X^{/}$ = _____

A) A
B) $A^{/}$
C) – -
D) X

Answer: C

44) Two set A & B are called overlapping if A∩B = _____

A) $A \subseteq B,\ B \subseteq A$
B) $A \subseteq B$
C) $A \subseteq B,\ B \subseteq A$
D) None

Answer: D

45) Which one is always true.

A) $A \subseteq B$
B) $A \cap B \subseteq B$
C) $B \subseteq A$
D) none

Answer: B

46) Every recurring non terminating decimal represents

A) Q
B) $Q^{/}$
C) R
D) none

Answer: A

47) If X & Y are two sets & n (X) = 18, n (Y) = 24, n(XUY) = 40 then n(X I Y) = _____

A) 3
B) 4
C) 6
D) 2
E) 1

Answer: C

48) A real number is always

A) a natural no
B) positive integer
C) Rational number
D) complex number

Answer: D

Groups

1) The set N of natural numbers is closed with respect to

A) Addition
B) Multiplication
C) Both A & B
D) Subtraction

Answer: C

2) The set Z of integers is closed with respect to

A) Addition
B) Multiplication
C) Subtraction
D) A, B and C are correct

Answer: D

3) The set R – {0} of real numbers is closed with respect to

A) Addition
B) Multiplication
C) Division
D) A,B & C are correct

Answer: D

4) In the set S = {0, 1} the binary operation defined is

A) –
B) +
C) ×
D) ÷

Answer: C

5) The set S = {- 1, 1, - i, i} is a group with respect to the binary operation

A) ÷
B) ×
C) +
D) –

Answer: B

6) The set S = {1, ω, ω^2} is a group with respect to the binary operation

A) ×
B) ÷
C) +
D) –

Answer: A

7) If set is a group with respect to addition then the number of identity elements in S is

A) Unique
B) Two
C) Three
D) None

Answer: A

8) If set S is a group with respect to addition then each element of S has _____ inverse.

A) Unique

B) Two
C) Three
D) None

Answer: A

9) R – {0} is a group w.r.t the binary operation

A) +
B) ×
C) ÷
D) –

Answer: B

10) Q – {0} is a group w.r.t the binary operation

A) +
B) ×
C) ÷
D) –

Answer: B

11) R is a group w.r.t the binary operation.

A) +
B) ×
C) ÷
D) –

Answer: A

12) Q is a group w.r.t the binary operation.

A) +
B) ×
C) ÷
D) –

Answer: A

13) S = {1, - 1} is a group w.r.t the binary operation.

A) +
B) ×
C) -
D) none of these

Answer: B

14) S = {0} is a trivial group under

A) +
B) ×
C) ÷
D) –

Answer: A

15) S = {1} is trivial group under

A) +
B) ×
C) –
D) division

Answer: B

16) A non empty set S which is closed with a binary operation '*' is called group if

A) The binary operation is associative
B) There exists identity element with respect to the binary operation.
C) There exist a unique inverse of each element of S with respect to the binary operation.
D) All A, B & C hold.

Answer: D

17) In a proposition if $p \rightarrow q$ then $q \rightarrow p$ is called

A) inverse of $p \rightarrow q$
B) converse of $p \rightarrow q$
C) contrapasitive $p \rightarrow q$
D) none

Ans: B

18) Truth table containing all false values is called

A) Tautology
B) Selfcontridiction
C) Equivallent
D) None

Ans: B

19) Truth table containing all true values is called

A) Tautology
B) Selfcontridiction
C) Equivallent
D) None

Ans: A

20) In a proposition if $p \rightarrow q$ then contrapasitive of this proposition is denoted by

A) $q \rightarrow p$
B) $\sim q \rightarrow p$
C) $\sim q \rightarrow \sim p$
D) None

Ans: C

21) In a proposition if $p \rightarrow q$ then inverse of this proposition is denoted by

A) $q \rightarrow p$
B) $\sim q \rightarrow p$
C) $\sim p \rightarrow \sim q$
D) None

Ans : C

22) In a proposition if $p \rightarrow q$ then converse of this proposition is denoted by

A) $q \rightarrow p$
B) $\sim q \rightarrow p$
C) $\sim q \rightarrow \sim p$
D) None

Ans: A

Chapter 6 Anti-Derivatives

1) The anti derivative of the function f(y) = secy tan y is

A) sec y tan y
B) $\sec^2 y$
C) secy + c
D) tany

Answer: C

2) The anti derivative of zero is

A) 1
B) 0
C) x
D) constant

Answer: D

3) The anti derivative of the function f(y) = 4^y is

A) $4^{y+1} + C$
B) $4^y \ln 4$
C) $\frac{4^y}{l_n 4} + C$
D) $4^y + C$

Answer: C

4) The anti derivative of the function f(y) = $\tan^2 y \operatorname{cosec}^2 y$ is

A) $\tan^2 y + c$
B) tany + c
C) $\operatorname{cosec}^2 y + c$
D) cosecy + c

Answer: B

5) The anti derivative of the function f(z) = $(3z - 8)^5$ is

A) $\frac{(3z-8)^6}{6} + c$
B) $\frac{(3z-8)^6}{12} + c$
C) $\frac{(3z-8)^6}{18} + c$
D) $6(3z-8)^6 + c$

Answer: C

6) The value of $\int \frac{4y^3 - 4y}{y^4 - 2y^2 + 3} dy$ is

A) $l_n(y^3 - 4y) + c$
B) $l_n(y^4 - 2y + 3) + c$
C) $l_n(y^4 - 2y^2 + 3) + c$
D) $l_n(4y^3 - 4y) + c$

Answer: C

7) The value of $\int \frac{1}{y l_n y} dy$ is

A) $l_n|y| + c$
B) $l_n \frac{1}{y} + c$
C) $\frac{1}{y} + c$
D) $l_n[l_n|y|] + c$

Answer: D

8) The value of $\int \frac{\sec^2 y}{\tan 45^o} dy$ is

A) $l_n|\tan y| + c$
B) $l_n|\tan 45^o| + c$
C) tan y + c
D) sec y + c

Answer: C

9) The anti derivative of the function f(y) = y tan 45^o is

A) $\sec^2 45^o + C$
B) $y \sec^2 45^o$
C) $\frac{y^2}{2} \sec^2 45^o$
D) ½ y^2 + c

Answer: D

10) The value of $\int (\tan 45^o) \sec^2 y \, dy$ is

A) $\frac{(\tan 45^o)^4}{4} + c$
B) $\frac{(\tan 45^o)^4}{4}$
C) $\frac{(\tan 45^o)^4}{4} \tan y + c$
D) Tan y + c

Answer: D

11) The value of $\int (\cot 45^o)^5 \cos ec^2 y \, dy$

A) $\frac{(\cot 45^o)^5}{6}$

B) $-\frac{(\cot 45^o)^6}{6}+c$

C) $\frac{(\cot 45^o)^6}{6}+c$

D) – cot y + c

Answer: D

12) The value of $\int (\sin\alpha)^3 \cos x\, dx$ is

A) $\frac{(\sin\alpha)^4}{4}$

B) $\frac{(\sin\alpha)^4}{4}+c$

C) $\frac{(\sin\alpha)^3}{3}+c$

D) $(\sin\alpha)^3 \sin x + c$

Answer: D

13) The value of $\int \sin x\ \cos\alpha\, dx$

A) $\frac{(\sin x)^2}{2}$

B) $\frac{(\sin x)^2}{2}+c$

C) $-\cos x \cos\alpha + c$

D) $\cos x \cos\alpha + c$

Answer: C

14) the value of $\int \sec^3\alpha\, dy$ is

A) tan α + c

B) – tan α + c

C) y $\sec^2$ α + c

D) y tanα + c

Answer: C

15) The value of $\int \cos ec^2 a\ dx$ is

A) – cot a + c

B) cot a + c

C) x cot a + c

D) x cosec^2 a + c

Answer: D

16) The value of $\int \frac{\cot x \cot 45^o}{l_n \sin x} dx$ is

A) l_n sinx + c

B) l_n cotx + c

C) l_n (l_n sinx) + c

D) – l_n (l_n cotx) + c

Answer: C

17) The value of $\int \tan^2 y \sec^2 y\ dy$ is

A) $\frac{(\tan y)^3}{3}+c$

B) $\frac{(\tan y)^2}{2}+c$

C) $\frac{(\tan y)^3}{4}+c$

D) $\frac{1}{2}(\tan y)^3+c$

Answer: A

18) The value of $\int (y^2+y+5)^4\,(2y+1)\ dy$

A) $\frac{y^3}{3}+\frac{y^2}{2}+5y+c$

B) $\frac{(y^2+y+5)^4}{4}(y^2+y)+c$

C) $\frac{(2y=1)^5}{5}+c$

D) $\frac{(y^2+y+5)^5}{5}+c$

Answer: D

19) The partial fraction of $\frac{2x-1}{x(x-1)}$ are

A) $\frac{Ax+b}{x^2-x}$

B) $\frac{A}{x}+\frac{B}{x-1}$

C) $\frac{A}{x}-\frac{B}{x-1}$

D) $\frac{A}{x-1}-\frac{B}{x}$

Answer: B

20) In the form of partial fractions the rational function $\frac{(3x^2-1)(2x+1)}{(x-1)(x^2+1)}$ can be written as

A) $\frac{A}{x-1}+\frac{B}{x^2+1}$

B) $\frac{A}{x-1}-\frac{B}{x^2+1}$

C) $\frac{A}{x-1}+\frac{Bx}{x^2+1}$

D) $\frac{A}{x-1}+\frac{Bx+c}{x^2+1}$

Answer: D

21) In the form of partial fractions the rational function $\frac{x^3+x^2+2x+3}{(x^2+1)(x^2+2)}$ can be written as

A) $\frac{A}{x^2+1}+\frac{B}{x^2+2}$

B) $\frac{Ax+B}{x^2+1}+\frac{Cx+D}{x^2+2}$

C) $\frac{Ax-B}{x^2+1}+\frac{Cx-D}{x^2+2}$

D) $\frac{A+B}{x^2+1}+\frac{C+D}{x^2+2}$

Answer: B

22) In the form of partial fraction the rational function $\frac{x^2+2x}{(x+1)^2(x^2+1)}$ can be written as

A) $\frac{A}{x+1}+\frac{B}{x^2+1}$

B) $\frac{A}{x+1}+\frac{Bx+C}{x^2+1}$

C) $\frac{A}{(x+1)^2}+\frac{Bx+C}{x^2+1}$

D) $\frac{A}{x+1}+\frac{B}{(x+1)^2}+\frac{Cx+D}{x^2+1}$

Answer: D

23) The value of $\int\frac{dx}{(x+2)^2+4}$ is

A) $Tan^{-1}(x+2)$

B) $Tan^{-1}\frac{(x+2)}{2}$

C) $\frac{1}{2}Tan^{-1}\frac{(x+2)}{2}+C$

D) $\frac{1}{4}Tan^{-1}\left(\frac{x+2}{4}\right)+C$

Answer: C

24) The value of $\int\frac{dx}{x^2-1}$ is

A) $l_n\left|\frac{x-1}{x+1}\right|+C$

B) $l_n\left|\frac{x+1}{x-1}\right|+C$

C) $\frac{1}{2}l_n\left|\frac{x+1}{x-1}\right|+C$

D) $\frac{1}{2}l_n\left|\frac{x-1}{x+1}\right|+C$

Answer: D

25) The value of $\int\frac{dx}{4-x^2}$ is

A) $l_n\left|\frac{2-x}{2+x}\right|+C$

B) $l_n\left|\frac{2+x}{2-x}\right|+C$

C) $\frac{1}{4}l_n\left|\frac{2+x}{2-x}\right|+C$

D) $\frac{1}{4}l_n\left|\frac{2-x}{2+x}\right|+C$

Answer: C

26) The value of $\int\frac{1+\cos x}{x+\sin x}dx$ is

A) $l_n\left|x+\sin x\right|+C$

B) $x+\sin x+C$

C) $l_n\left|x+\cos x\right|+C$

D) $l_n\left|\sin x+\cos x\right|+C$

Answer: A

27) The indefinite integral of the function $f(y)=\frac{2y}{y^2+1}$ is

A) $y^3\,y+C$

B) $\frac{y^3}{3}+y$

C) y^2+C

D) $l_n\left|y^2+1\right|+C$

Answer: D

7. Integration by Substitution

1) The indefinite integral of $f(y) = \frac{e^y}{1+e^{2y}}$ is

A) $l_n \left|1+e^{2y}\right| + C$
B) $e^y + C$
C) $Tan^{-1} e^y + C$
D) $Cot^{-1} e^y + C$

Answer: C

2) The indefinite integral of f(x) = l_n x is

A) $\frac{1}{x} + c$
B) $\frac{l_n x}{x} + c$
C) l_n x – x + c
D) x l_n x – x + c

Answer: D

3) The anti derivative of $f(y) = e^y\left(\cos^{-1} y - \frac{1}{\sqrt{1-y^2}}\right)$ is

A) $e^y Sin^{-1} y + c$
B) $e^y Cos^{-1} y + c$
C) $-e^y Cos^{-1} y + c$
D) $-e^y Sin^{-1} y + c$

Answer: B

4) The value of $\int e^y\left(\sec^{-1} y + \frac{1}{y\sqrt{y^2-1}}\right)dy$ is

A) $e^y Co\sec^{-1} y + c$
B) $-e^y Co\sec^{-1} y + c$
C) $e^y Sec^{-1} y + c$
D) $-e^y Sec^{-1} y + c$

Answer: C

5) The anti derivative of $f(x) = e^x\left(Co\sec^{-1} x - \frac{1}{x\sqrt{x^2-1}}\right)$ is

A) $e^x Sec^{-1} x + c$
B) $e^x Co\sec^{-1} x + c$
C) $-e^x Sec^{-1} x + c$
D) $-e^x Co\sec^{-1} x + c$

Answer: B

6) The value of $\int e^y (y^3 + 3y^2)\,dy$ is

A) $e^y\left(\frac{y^4}{4} + y^3\right) + c$
B) $e^y\left(y^4 + y^3\right) + c$
C) $e^y y^3 + c$
D) $3e^y y^2 + c$

Answer: C

7) The anti derivative of $f(x) = e^x x^3 + 3e^x x^2$ is

A) $e^x \frac{x^4}{4} + e^x x^3 + c$
B) $e^x x^4 + 3e^x x^2$
C) $e^x \frac{x^4}{4} + 3e^x x^3 + c$
D) $e^x x^3 + c$

Answer: D

8) The value of $\int\left(e^z Cosz - e^z Sinz\right)dz$ is

A) $-e^z \sin z + c$
B) $e^z \cos z + c$
C) $-e^z \cos z + c$
D) $e^z \sin z + c$

Answer: B

9) The definite integral of $f(y) = e^y Coty - e^y Co\sec^2 y$ is

A) $e^y Co\sec^2 y + c$
B) $-e^y Co\sec^2 y + c$
C) $-e^y \tan y + c$
D) $e^y \cot y + c$

Answer: D

10) The anti derivative of $f(z) = e^z Secz + e^z Secz \tan z$ is

A) e^z Cosecz + c
B) e^z secz + c
C) – e^z secz tanz + c
D) e^z Secz tan z + c

Answer: B

11) The value of $\int \left(e^y Co\sec y - e^y Co\sec y Coty\right)dy$ is

A) e^y Cosecy Coty + c
B) $-e^y$ Cosecy Coty + c
C) e^y Cosec y + c
D) $-e^y$ Cosecy + c

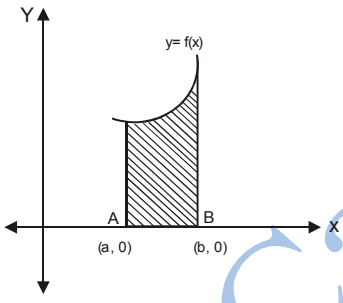
Answer: C

12) The value of $\int_{\frac{\pi}{4}}^{\frac{\pi}{4}} \left(Sec^2 y + Co\sec^2 y\right)dy$ is

A) 0
B) $Tan\frac{\pi}{4}$
C) 1
D) $-Cot\frac{\pi}{4}$

Answer: A

13) The shaded area in the figure can be represented by



A) $\int_0^a f(x)\,dx$
B) $\int_0^b f(x)\,dx$
C) $\int_b^a f(x)\,dx$
D) $\int_a^b f(x)\,dx$

Answer: D

14) The value of $\int_3^3 (x^3 + 3x^2 + 2x + 1)\,dx$ is

A) 27
B) 54
C) 52
D) 0

Answer: D

15) The value of $\int_1^3 (z^5 + 4z^4 + z^3)\,dz$ is

A) 1
B) 243
C) 324
D) $-\int_3^1 (z^5 + 4z^4 + z^3)\,dz$

Answer: D

16) The value of $\int_0^{\frac{\pi}{3}} \sin y\,dy$ is

A) 0
B) 1
C) $\frac{\sqrt{3}}{2}$
D) $-\int_{\frac{\pi}{3}}^0 \sin y\,dy$

Answer: D

17) The value of $\int_0^{\frac{\pi}{4}} \tan y \sec^2 y\,dy$ is

A) 0
B) 1
C) – 1
D) $-\int_{\frac{\pi}{4}}^0 \tan y \sec^2 y\,dy$

Answer: D

18) The value of $\int_1^3 (x^2 + 2x)^5\,dx + \int_3^5 (y^2 + 2y)^5\,dy$ is

A) $\int_1^5 (x^2 + 2x)^5\,dx$
B) $\int_3^5 (y^2 + 2y)^5\,dy$
C) $\int_1^3 (y^2 + 2y)^5\,dy$

D) $\int_1^5 (y^2+2y)^6\,dy$

Answer: A

19) The value of $\int_0^2 (y^3+3y^2)^6\,dy + \int_2^4 (z^3+3z^2)^6\,dz$ is

A) 204
B) 364
C) $\int_0^4 (z^3+3z^2)^6\,dz$
D) ¾

Answer: C

20) If f and g are continuous functions and $\int_1^3 f(y)\,dy = 8, \int_3^7 f(z)\,dz = 9$ then the value of $\int_1^7 f(z)\,dz$ is

A) 7
B) 1
C) 6
D) 17

Answer: D

21) IF f and g are continuous functions on (a, b), s.t. $\int_a^b f(x)\,dx = 12$ *and* $\int_a^b g(x)\,dx = 5$ then the value of $\int_a^b [f(x)-g(x)]\,dx$ is

A) 7ab
B) 7(a – b)
C) 7(b – a)
D) 7

Answer: D

22) If f and g are continuous functions on (1, 5), such that $\int_1^5 f(y)\,dy = 5$ *and* $\int_1^5 g(y)\,dy = 3$ then the value of $\int_1^5 [f(y)+g(y)]\,dy$ is

A) 6
B) 8
C) 4
D) 2

Answer: B

23) If $\int_2^5 f(x)\,dx = 5$ then the value of $\int_2^5 5f(y)\,dy$ is

A) 5
B) 3
C) 25
D) 10

Answer: C

24) If $\int_1^3 f(x)\,dx = 4$ then the value of $\int_3^1 f(y)\,dy$ is

A) 2
B) – 2
C) 3
D) – 4

Answer: D

25) The solution of the equation $\frac{dy}{dx} = 2x$ is

A) $y = 2x$
B) $y = x^2 + c$
C) $y = 2x^2 + c$
D) $y = 3x^2 + c$

Answer: B

26) Let f be continuous on (1, 7) and $\int_1^7 f(x)\,dx = 9$, $\int_1^7 f(y)\,dy = 19$ then the value of $\int_3^7 f(z)\,dz$ is

A) 10
B) 28
C) 7
D) 4

Answer: A

27) The solution of $\frac{dy}{dx} = \frac{x}{y}$ is

A) $x^2 + c$
B) $y^2 = x^2 + c$
C) $y^2 = x + 2c$
D) $y^2 = 2x$

Answer: B

28) If the acceleration of a particle is given by z = 2t, then its velocity at any time t is:

A) $2t^2 + c$
B) $3t^2 + c$
C) $t^2 + c$
D) 2

Answer: C

29) If the velocity of a particle moving in a straight line is given by $v = 3t^2$ then the distance traveled by it in the first T seconds is

A) $3t^2 + c$
B) $t^3 + c$
C) $3t^2 + c$
D) $T^3 + c$

Answer: D

30) The solution of $\frac{dy}{dx} = \frac{1}{x}$ is

A) $y = x^2 + c$
B) $y = l_n |Cx|$
C) $y = l_n \left|1/x\right|$
D) $y = \frac{1}{x} + c$

Answer: B

Chapter 3. Matrices and Determinant

1) The order of the matrix [4 7 3] is
A) 3×1
B) 1×3
C) 3×3
D) 1×1
Ans : B

2) The value of determinant of the matrix $\begin{bmatrix} 1 & 3 & 5 \\ 7 & 9 & 11 \\ 13 & 15 & 17 \end{bmatrix}$ is
A) 0
B) 1
C) 2
D) 3
Ans : A

3) $\begin{bmatrix} 4 & 0 \\ 0 & 1 \end{bmatrix}$ is a _____ matrix.
A) singular
B) unit
C) diagonal
D) scalar
Ans : C

4) If $\begin{bmatrix} 6 & \lambda \\ 3 & 2 \end{bmatrix}$ is singular matrix then λ =
A) 4
B) -4
C) 12
D) 18
Ans: A

5) A, B, C are three matrices such that AB = C Then B =
A) $C^{-1}A$
B) CA
C) $A^{-1}C$
D) AC
Ans: C

6) Value of the determinant of matrix $\begin{bmatrix} a & 0 & b \\ c & 0 & -d \\ e & 0 & f \end{bmatrix}$ is
A) 1
B) 2
C) 0
D) 3
Ans : C

7) Value of determinant of the matrix $\begin{bmatrix} a & b+c & 1 \\ b & c+a & 1 \\ c & a+b & 1 \end{bmatrix}$ is
A) c
B) b
C) a
D) o
Ans: D

8) If B is square matrix and $B^t = -B$, then B is called
A) Symmetric
B) Skew symmetric
C) Singular
D) Non-singular
Ans : B

9) For any two non singular square matrices A and B, $(AB)^{-1}$ =
A) AB
B) $B^{-1}A^{-1}$
C) $A^{-1}B^{-1}$
D) $A^{-1}B$
Ans : B

10) If A = $\begin{bmatrix} 1 & 2 \\ 3 & -4 \end{bmatrix}$ and B = $\begin{bmatrix} 6 \\ 5 \end{bmatrix}$ then we can find
A) A + B
B) A – B
C) AB
D) BA
Ans: C

11) If A is non singular square matrix then A^{-1} =
A) $\frac{1}{A}$
B) $\frac{1}{|A|}$
C) $\frac{adjA}{|A|}$
D) $\frac{1}{adjA}$
Ans: C

12) If A is matrix of order m × n then kA is of order (k is real number)
A) km × n
B) m × kn
C) km × kn
D) m × n
Ans: D

13) The value of determinant of the matrix $\begin{bmatrix} 1 & \cos^2\alpha & \sin^2\alpha \\ 1 & \cos^2\beta & \sin^2\beta \\ 1 & \cos^2\chi & \sin^2\chi \end{bmatrix}$ is
A) 1
B) 0

C) 2
D) – 1

Ans: B

14) The value of determinant of the matrix $\begin{bmatrix} \cos 2\alpha & \cos^2\alpha & \sin^2\alpha \\ \cos 2\beta & \cos^2\beta & \sin^2\beta \\ \cos 2\chi & \cos^2\chi & \sin^2\chi \end{bmatrix}$ is

A) 1
B) 2
C) 0
D) – 1

Ans : C

15) The value of determinant of the matrix $\begin{bmatrix} a^2-b^2 & b^2-c^2 & a^2-c^2 \\ b^2-c^2 & c^2-a^2 & b^2-a^2 \\ c^2-a^2 & a^2-b^2 & c^2-b^2 \end{bmatrix}$ is

A) 0
B) 1
C) 2
D) 3

Ans: A

16) If B = $\begin{bmatrix} 3 & 5 & 4 \\ 4 & 4 & 6 \\ 1 & 2 & 3 \end{bmatrix}$ then – B is

A) $\begin{bmatrix} -3 & -5 & -4 \\ -4 & -4 & -6 \\ -1 & -2 & -3 \end{bmatrix}$

B) $\begin{bmatrix} -3 & 5 & 4 \\ -4 & 4 & 6 \\ -1 & 2 & 3 \end{bmatrix}$

C) $\begin{bmatrix} 3 & -5 & 4 \\ 4 & -4 & 6 \\ 1 & -2 & 3 \end{bmatrix}$

D) $\begin{bmatrix} 3 & 5 & -4 \\ 4 & 4 & -6 \\ 1 & 2 & -3 \end{bmatrix}$

Ans: A

17) If A = $\begin{bmatrix} 3 & 2 & 1 \\ 6 & 5 & 4 \\ 7 & 6 & 4 \end{bmatrix}$ then 2A is

A) $\begin{bmatrix} 6 & 4 & 2 \\ 6 & 5 & 4 \\ 7 & 6 & 4 \end{bmatrix}$

B) $\begin{bmatrix} 3 & 2 & 1 \\ 12 & 10 & 8 \\ 7 & 6 & 4 \end{bmatrix}$

C) $\begin{bmatrix} 3 & 2 & 1 \\ 6 & 5 & 4 \\ 14 & 12 & 8 \end{bmatrix}$

D) $\begin{bmatrix} 6 & 4 & 2 \\ 12 & 10 & 8 \\ 14 & 12 & 8 \end{bmatrix}$

Ans: D

2. Elements of Plane Analytical Geometry

1) The set $\{x \mid a < x < b\}$ can also written as

A) [a, b]
B) (a, b)
C) [a, b)
D) (a, b]

Answer: B

2) The set $\{x \mid a \le x \le b\}$ is called

A) Interval
B) Open Interval
C) Half Open interval
D) Closed interval

Answer: D

3) The distance between the points (0, 0) and (0, 2) is

A) 4
B) 2
C) $\sqrt{2}$
D) 0

Answer: B

4) If $P_1 (X_1, Y_1)$ and $P_2 (X_2, Y_2)$ are two points such that $\overline{P_1P_2}$ is parallel to x – axis, then

A) $x_2 = x_1$
B) $x_2 = y_1$
C) $y_2 = y_1$
D) $y_2 = x_2$

Answer: C

5) If O (0, 0), A (4, 6) are two points then the co-ordinates of the mid point $\overline{OA}$ are

A) (4, 3)
B) (2, 3)
C) 4, 6)
D) (2, 6)

Answer: B

6) The distance of any point P(x, y) from the origin is

A) x
B) y
C) $x^2 + y^2$
D) $\sqrt{x^2 + y^2}$

Answer: D

7) If point P divides a line segment $\overline{P_1P_2}$ internally then the ratio is

A) Positive
B) Negative
C) 1 : 2
D) 1 : 3

Answer: A

8) The points (- 2, 0) , (- 1, 0), (1, 0) and (2, 0) lie on

A) y – axis
B) x- axis
C) y = - x
D) y = 5x

Answer: B

9) If A (0, 0) B (3, 0) and C(0, 3) are the vertices of a triangle then co-ordinates of its centroid is

A) (1, 1)
B) (0, 1)
C) (3, 3)
D) $(\frac{3}{2}, \frac{3}{2})$

Answer: A

10) The points (2, 2) , (3, 3) and (5, 5) lie on a line defined by the equation

A) x + y = 0
B) y = 2x
C) y = 3x
D) x – y = 0

Answer: D

11) The points (1, - 1) , (2, - 2), (4, -4) are

A) collinear
B) non collinear
C) on three lines
D) vertices of a triangle

Answer: A

12) The points (0, 0), (1, 0) and (0, 2) are the vertices of

A) Right triangle
B) Isosceles Triangle
C) Equilateral triangle
D) Oblique triangle

Answer: A

13) If the points A (x1, y1), B (x2, y2) and C(x3, y3) are collinear, then area of triangle ABC is

A) 0
B) 1
C) 2
D) 3

Answer: A

14) If two medians of a triangle intersect at a point (2, 2) then 3rd median will pass through the point

A) (0, 1)
B) (3, 3)
C) (1, 1)

D) (2, 2)
Answer: D

15) If two internal angle bisectors of a triangle pass through the origin then the 3rd angle bisector will pass through the point

A) (3, 0)
B) (0, 3)
C) (0, 0)
D) (3, 3)
Answer: C

16) In inclination of a straight line is 45^o then its slope is equal to

A) 0
B) 1
C) – 1
D) ∞
Answer: B

17) If slope of a line is 2 then slope of the line perpendicular to this line is equal to

A) – 2
B) – ½
C) 2
D) 0
Answer: B

18) If a line is parallel to y-axis then slope of the line perpendicular to this line is

A) ∞
B) 0
C) 1
D) – 1
Answer: B

19) The inclination of the line defined by the equation y = - x is

A) $-\frac{\pi}{3}$
B) $-\frac{\pi}{2}$
C) $\frac{3\pi}{4}$
D) $\frac{\pi}{4}$
Answer: C

20) If the inclination of a line is $\frac{\pi}{4}$ then equation o f that line is

A) x – y = 0
B) x + y = 0
C) 2x – y = 1
D) x + y = 1
Answer: A

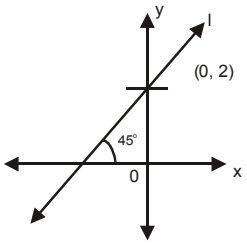
21) If one of the angles between two intersecting lines is 122^o then the acute angle between these lines is of measure

A) 98^o
B) 68^o
C) 58^o
D) 22^o
Answer: C

22) The equation of the line passing through the points (-1, 1), (- 1, - 1) and (- 1, 0) is

A) y = - x + 1
B) y = - 1
C) x = -1
D) x + y = - 1
Answer: C

23) Equation of the line l given in the figure is



A) y = 2x + 1
B) y = 2x – 1
C) y = x + 2
D) y = x – 2
Answer: C

24) The equation of the line passing through the points (1, 0) and (0, 1) is

A) x – y = 1
B) x + y = 1
C) x + y = - 1
D) x – y = - 1
Answer: B

25) The point of insertion of the lines 3x + 4y = 0 and 5x – 6y = 0

A) (3, 4)
B) (5, - 6)
C) (3, 5)
D) (0, 0)
Answer: D

26) The three lines define by the equation x + 2y = 0,

$2x + y = 0$ and $3x + 5y = 0$ are

A) Parallel
B) Perpendicular
C) Concurrent
D) Not parallel

Answer: C

27) The length and breadth of a plane is

A) finite
B) infinite
C) x, y
D) x + y

Answer: B

28) The distance of the point (7, 0) from the line $y - 2 = 0$ is

A) 7
B) 2
C) 5
D) 0

Answer: B

29) The distance of the point (2, 3) from the line $x + y = 5$ is

A) 2
B) 0
C) 3
D) 5

Answer: B

30) The distance between the two lines, defined by $y - 2 = 0$ and $y + 2 = 0$

A) 0
B) 2
C) 4
D) ¼

Answer: C

Chapter 4. Equations

1) An equation of the form $ax^2 + bx + c = 0$ is called

A) Quadratic
B) Cubic
C) Bi-quadratic
D) Linear

Answer: A

2) In the quadratic equation $ax^2 + bx - c = 0$ the sum of roots is

A) $-b/c$
B) $-b/a$
C) $-c/a$
D) a/c

Answer: B

3) In the quadratic equation $ax^2 - bx + c = 0$ the product of roots is

A) c/a
B) b/a
C) a/c
D) $-c/a$

Answer: A

4) The sum of cube roots of unity is

A) 3
B) 2
C) 1
D) 0

Answer: D

5) The roots of a quadratic equation $ax^2 + bx + c = 0$ are

A) $\frac{-b \pm \sqrt{b^2 + 4ac}}{2a}$
B) $\frac{+b \pm \sqrt{b^2 - 4ac}}{2a}$
C) $\frac{-b \pm \sqrt{b^2 - 4ac}}{2}$
D) $\frac{-b \pm \sqrt{b^2 + 4ac}}{2a}$

Answer: C

6) The product of cube root of unity is

A) 3
B) 2
C) 1
D) 0

Answer: C

7) The number of real roots in cube roots of unity are

A) 3
B) 2
C) 1
D) 0

Answer: C

8) The roots of quadratic equation $ax^2 - bx - c = 0$ are real if

A) $b^2 + 4ac \leq 0$
B) $b^2 - 4ac < 0$
C) $b^2 + 4ac \geq 0$
D) $b^2 - 4ac = 0$

Answer: C

9) The roots of quadratic equation $ax^2 + bx - c = 0$ are equal if

A) $b^2 - 4ac < 0$
B) $b^2 + 4ac \geq 0$
C) $b^2 + 4ac = 0$
D) $b^2 - 4ac = 0$

Answer: C

10) The roots of quadratic equation $ax^2 - bx - c = 0$ are imaginary if

A) $b^2 + 4ac < 0$
B) $b^2 - 4ac \geq 0$
C) $b^2 + 4ac = 0$
D) $b^2 - 4ac = 0$

Answer: A

11) If 4 & - 5 are the roots, then quadratic equation will be

A) $x^2 - x - 20 = 0$
B) $x^2 - x + 20 = 0$
C) $x^2 + x - 20 = 0$
D) $x^2 + x + 20 = 0$

Answer: C

12) The value of ω^{12} is

A) 1
B) ω
C) ω^2
D) 0

Answer: A

13) The square of a number when added to the number results in 6 then the number is

A) 2
B) – 2
C) –3
D) Both A & C

Answer: D

14) The sum of roots of $3x^2 - 4x + 7 = 0$ is

A) 4/3
B) 7/3
C) –7/3
D) –4/3

Answer: A

15) The product of roots of $3x^2 + 5x - 2 = 0$ is

A) 5/3
B) 3/5
C) –2/5
D) –2/3

Answer: D

16) If $3^{1+x} + 5.3^x - 8 = 0$, then x =

A) 8
B) 5
C) 3
D) 0

Answer: D

17) If $\sqrt{2x+1} + \sqrt{x} = 5$ then x =

A) 5
B) 4
C) 3
D) 2

Answer: B

18) If $\sqrt{5x-1} - \sqrt{2x} = 1$ then x =

A) 3
B) 2
C) 1
D) 5

Answer: B

19) If $\frac{\sqrt{2x+1} - \sqrt{x}}{\sqrt{2x+1} + \sqrt{x}} = \frac{1}{5}$, then x =

A) 1
B) 2
C) 3
D) 4

Answer: D

20) If one root of quadratic equation is 4 + 5i, then equation

A) $x^2 - 8x + 41 = 0$
B) $x^2 + 8x + 41 = 0$
C) $x^2 - 41x + 8 = 0$
D) $x^2 - 41x - 8 = 0$

Answer: A

21) In the quadratic equation $x^2 - 9 = 0$, the sum of the root is

A) 9
B) –9
C) 1/9
D) 0

Answer: D

22) In the quadratic equation $3x^2 - 5x = 0$, the product of root is

A) 5/3
B) –5/3
C) 0
D) 3/5

Answer: C

23) The roots of quadratic equation $x^2 - 4x = 0$ are

A) Imaginary
B) Rational & Different
C) Irrational
D) Rational & Equal

Answer: B

24) Ifω, ω^2 are complex cube roots of unity
Then $\omega + \omega^2$ =

A) 1
B) –1
C) 0
D) none of these

Answer: B

25) Ifω, ω^2 are complex cube roots of unity then ω^2 =

A) $1/\omega$
B) $-\omega$
C) $-1/\omega$
D) none of these

Answer: A

26) $\left(\frac{-1+\sqrt{-3}}{2}\right)^4 + \left(\frac{-1-\sqrt{-3}}{2}\right)^4 =$

A) 0
B) 1
C) –1
D) 4

Answer: C

27) If ω and ω^2 are cube roots of unity then
$(1 - \omega - \omega^2)^5$ =

A) 0
B) 1
C) 32
D) None of these

Answer: C

28) If the area of a rectangle is 56 & the length is one more than the breadth then the dimensions are

A) –8, -7
B) 8, 7
C) 14, 4
D) 28, 2

Answer: B

29) The sides of a right angle triangle are 2x + 1, 2x, 2x – 1, then x is

A) –1
B) ½
C) –2
D) 2

Answer: D

30) If one root of $4x^2 + 7hx – h^2 + 9 = 0$ is zero then h =

A) 0
B) 3
C) –3
D) ± 3

Answer: D

Chapter 5 Linear Inequalities & Linear Programming

1. Optimize means _____ a quantity under certain constraints:

a) minimize
b) maximize
c) maximize or minimize
d) none of the above
Answer: c

2. Which of them is associated equations?

a) ax – by = c
b) ax + by = c
c) ax + by = - c
d) none of the above
Answer: b

3. There are _____ feasible solutions in the feasible region.

a) infinite
b) finite
c) defined
d) none of above
Answer: a

5. Inequalities have _____ symbols.

a) 2
b) 3
c) 4
d) 1
Answer: d

6. The graph of linear equation 2x + 3y = 10

a) // line
b) curve
c) zig zag
d) straight line
Answer: b

7. Non negative constraints are called _____ variables.

a) non – decision
b) decision
c) constant
d) none of the above
Answer: a

8. The solution set of x < 4 is _____

a) $-\infty < x < 4$
b) $-\infty > x > 4$
c) $-\infty < x < 2$
d) $-\infty > x < 2$
Answer: c

9. Corner point is also called _____

a) code
b) curve
c) vertex
d) none of the above
Answer: c

10. The solution set of x > 10 is _____

a) $10 > x > \infty$
b) $10 < x < -\infty$
c) $10 > x > -\infty$
d) $10 < x < \infty$
Answer: b

11. 3x + 4 > 0 is

a) equation
b) identity
c) inequality
d) none of these
Answer: c

12. $3x + 4 \geq 0$ is

a) equation
b) inequality
c) identity
d) none of these
Answer: b

13. 3x + 4 < 0 is

a) inequality
b) equation
c) not inequality
d) identity
Answer: a

14. $3x + 4 \leq 0$ is

a) not inequality
b) equation
c) identity
d) inequality
Answer: d

15. $3x + 4 = 0$ is

a) not inequality
b) equation
c) identity
d) inequality
Answer: b

16. An expression involving any of the symbols $<$, $>$, $\leq$ or $\geq$ is called

a) equation
b) inequality
c) linear equation
d) identity
Answer: b

17. $2x + 3x > 4$ is linear inequality in

a) one variable
b) two variables
c) three variables
d) none of these
Answer: b

18. $ax + by < c$ is linear inequality in

a) four variables
b) three variables
c) two variables
d) one variable
Answer: c

19. The real numbers which satisfy an inequality form its

a) solution
b) coefficient
c) domain
d) range
Answer: a

20. $x = 0$ is in the solution of the inequality

a) $x > 0$
b) $3x + 4 < 0$
c) $2x - 3 < 0$
d) $x - 2 < 0$
Answer: d

21. $x = 0$ is in the solution of the inequality

a) $x + 1 < 0$
b) $2x + 3 < 0$
c) $2x - 3 < 0$
d) $3 + x < 0$
Answer: c

22. $x = 1$ is in the solution of the inequality
a) $x + 1 < 0$
b) $2x - 4 < 0$
c) $2x - 4 > 0$
d) $x + 3 < 0$
Answer: b

23. $x = 1$ is in the solution of the inequality

a) $x + 1 > 0$
b) $x - 2 > 0$
c) $3x - 1 < 0$
d) $x + 2 < 0$
Answer: a

24. $x = -1$ is in the solution of inequality

a) $x + 5 < 0$
b) $2x + 3 \leq 0$
c) $x > 0$
d) $2x + 3 > 0$
Answer: d

25. $x =$ _____ is in the solution of $2x + 3 < 0$

a) 0
b) 1
c) -1
d) -2
Answer: d

26. $x =$ _____ is in the solution of $2x + 3 \geq 0$

a) 1
b) -2
c) -3
d) -4
Answer: a

27. $x =$ _____ is in the solution of $2x - 3 < 0$

a) 2
b) -2
c) 3
d) 4
Answer: b

28. x = _____ is in the solution of $2x - 5 > 0$

a) 0
b) 2
c) – 2
d) 3
Answer: d

29. The points (x, y) which satisfy a linear inequality in two variables x and y form its

a) domain
b) range
c) solution
d) none of these
Answer: c

30. The solution set of the inequality $ax + by < c$ is

a) straight line
b) half plane
c) parabola
d) none of these
Answer: b

31. (0, 0) is in the solution of the inequality

a) $3x + 4y > 3$
b) $x - 2y < 2$
c) $x + 2y > 2$
d) $2x - 3y > 5$
Answer: b

32. (1, 1) is in the solution of the inequality

a) $3x + 4y > 3$
b) $2x + 3y < 2$
c) $4x - 3y > 5$
d) $2x - 3y > 2$
Answer: a

33. (1, 0) is in the solution of inequality

a) $3x + 2y > 8$
b) $2x - 3y < 4$
c) $2x + 3y > 3$
d) $x - 2y < -5$
Answer: b

34. (0, 1) is in the solution of the inequality

a) $3x + 2y > 8$
b) $2x - 3y < 4$
c) $2x + 3y > 5$
d) $x - 2y < -5$
Answer: b

35. (0, 1) is in the solution of inequality

a) $x - 2y > 0$
b) $x - y < 2$
c) $3x + 2y > 5$
d) $3x - 2y < 2$
Answer: b

36. (0, 0) is in the solution of the inequality.
a) $x + y > 3$
b) $x - y > 2$
c) $3x + 2y > 5$
d) $3x - 2y < 2$
Answer: d

37. (1, 2) is in the solution of the inequality

a) $2x + y > 8$
b) $2x + y \leq 6$
c) $2x - y > 1$
d) $2x + 3y < 2$
Answer: b

38. The point _____ is in the solution of the inequality $2x - 3y < 5$

a) (1, 1)
b) (2, 2)
c) (0, 1)
d) (0, 2)
Answer: c

39. The point _____ is in the solution of the inequality $2x - 3y > 5$

a) (1, -1)
b) (2, 2)
c) (2, - 2)
d) (3, 3)
Answer: d

40. The point _____ is in the solution of the inequality $4x - 3y < 2$

a) (0, 1)
b) (2, 1)
c) (0, 0)
d) (3, 0)
Answer: a

Chapter5 Partial Fractions

1. An open formed by using the sign of equality "=" is called _____

a) Equation
b) In – equation
c) True sentence
d) False sentence

Answer: a

2. 2x = 3 is a conditional equation it is true for _____

a) 2
b) 3
c) $\frac{3}{2}$
d) $\frac{2}{3}$

Answer: c

3. $x^2 + x - 6 = 0$ is a conditional equation and it is true for

a) 2, 3
b) 2, - 3
c) – 2, - 3
d) – 2, 3

Answer: b

4. The symbol _____ shall be used both for equation and identity

a) ≅
b) =
c) ≠
d) ≡

Answer: d

5. $\frac{P(x)}{Q(x)}$, Q(x) ≠ 0 is known as

a) improper rational fraction
b) rational fraction
c) proper rational fraction
d) none of the above

Answer: b

6. $\frac{9x^2}{x^{3-1}}$ is a fraction.

a) rational fraction
b) improper fraction
c) rational fraction
d) none of these

Answer: a

7. $\frac{x^2-3}{3x+1}$ is a fraction

a) rational fraction
b) proper fraction
c) improper rational fraction
d) none of these

Answer: c

8. There are _____ types of rational fraction .

a) three
b) four
c) five
d) two

Answer: d

9. The partial fraction of $\frac{1}{x^2-1}$ is

a) $\frac{1}{2(x-1)} - \frac{1}{2(x+1)}$
b) $\frac{1}{2(x-1)}$
c) $\frac{1}{2(x+1)}$
d) $\frac{1}{2(x-1)} + \frac{1}{2(x+1)}$

Answer: a

10. The partial fraction of $\frac{2x^2-3x+4}{(x-1)^3}$ is

a) $\frac{2}{x-1}$
b) $\frac{1}{(x-1)^2}$

c) $\frac{2}{x-1}+\frac{1}{(x-1)^2}+\frac{3}{(x-1)^3}$

d) $\frac{3}{(x-1)^3}$

Answer: c

11. The partial fraction of $\frac{9x-7}{(x^2+1)(x+3)}$ is

a) $\frac{17x-6}{5(x^2+1)}$

b) $\frac{17x-6}{5(x^2+1)}-\frac{17}{5(x+3)}$

c) $\frac{17}{5(x+3)}$

d) none of these

Answer: b

12. The partial fraction of $\frac{x^3+2x+2}{(x^2+x+1)^2}$ is

a) $\frac{x-1}{x^2+x+1}$

b) $\frac{2x+3}{(x^2+x+1)^2}$

c) $\frac{2x+3}{(x^2+x+1)^2}-\frac{x-1}{x^2+x+1}$

d) $\frac{x-1}{x^2+x+1}+\frac{2x+3}{(x^2+x+1)^2}$

Answer: d

8. Pair of Lines & Circles

1) The intersection of a cone with a plane gives

A) Point
B) Line
C) Conic Section
D) Two points

Answer: C

2) The conic sections are described today by

A) Linear Equation
B) Bi-Quadratic equations
C) Quadratic equations
D) Cubic equations

Answer: C

3) The standard conic section are

A) Circle
B) Parabola
C) Ellipse / hyperbola
D) All A, B, C are true

Answer: D

4) The degenerate conic sections are

A) a point
B) two coincident lines
C) a pair of lines
D) All A, B, C are true

Answer: D

5) The equation $3x^2 - 4xy + 5y^2 = 0$ is called

A) Quadratic
B) Linear
C) Explicit
D) Homogeneous

Answer: D

6) The two lines represented by the equation $8x^2 + 41xy - 8y^2 = 0$are

A) Parallel
B) Non Parallel
C) Perpendicular
D) Coincident

Answer: C

7) If the two lines represented by the equation $ax^2 + 2hxy + by^2 = 0$ are perpendicular then,

A) $a = b$
B) $h = ab$
C) $a + b = 0$
D) $h = a + b$

Answer: C

8) The angle between the pair of lines represented by , $3x^2 - 4xy - 3y^2 = 0$ is

A) $\pi/2$
B) $\pi/3$
C) $\pi/4$
D) $\pi/6$

Answer: A

9) The pair of lines represented by $y^2 - 36 = 0$ are

A) Parallel
B) Perpendicular
C) Non parallel
D) Coincident

Answer: A

10) The center of the circle represented by the equation $(x - 1)^2 + (y - 2)^2 = 4$ is

A) (0, 0)
B) (1, 1)
C) (1, 2)
D) (1, - 2)

Answer: C

11) The radius of the circle, represented by the equation $x^2 + 2x + 1 + y^2 + 4y + 4 = 16$ is

A) 16
B) 8
C) 11
D) 4

Answer: D

12) The length of the diameter of the circle represented by the equation $2x^2 + 2y^2 - 8 = 0$, is

A) 8
B) 4
C) 2
D) 16

Answer: B

13) The length of the chord of the circle defined by $x^2 + 4x + 4 + y^2 + 6y + 9 = 9$, passing through the center is

A) 9
B) 3
C) 6
D) 4

Answer: C

14) The circumference of the circle represented by $x^2 + 2x + 1 + y^2 + 2y + 1 = 25$ is

A) 2π
B) 25π

C) 10π
D) 5π

Answer: C

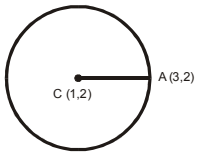
15) The length of the chord of the circle $x^2 - 2x + 1 + y^2 - 6y + 9 = 9$ passing through the point (1, 3) is
A) 9
B) 6
C) 3
D) 18

Answer: B

16) If length of a chord of the circle $x^2 - 2x + 1 + y^2 + 2y + 1 = 25$ is 10, then it will pass through the point
A) (-1, 1)
B) (1, -1)
C) (1, 5)
D) (5, 1)

Answer: B

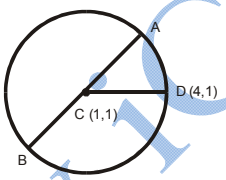
17) The equation of the circle given in the figure is



A) $(x + 1)^2 + (y + 2)^2 = 4$
B) $(x - 1)^2 + (y - 2)^2 = 9$
C) $(x - 1)^2 + (y - 2)^2 = 2$
D) $(x - 1)^2 + (y - 2)^2 = 4$

Answer: D

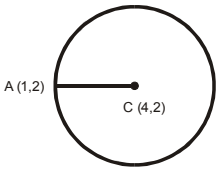
18) In the figure the length of the chord AB is



A) 4
B) 5
C) 6
D) 8

Answer: C

19) The circumference of the circle given in the figure is



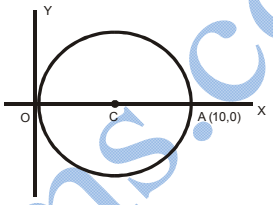
A) 6π
B) 4π
C) 2π
D) 8π

Answer: A

20) If a point P is outside the circle then from this point we can draw
A) one tangent to the circle
B) two tangents to the circle
C) three tangents to the circle
D) no tangent to the circle

Answer: B

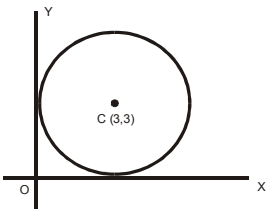
21) the equation of the circle given in the figure is



A) $x^2 + y^2 = 10$
B) $(x - 5)^2 + y^2 = 25$
C) $(x + 5)^2 + y^2 = 25$
D) $x^2 + (y - 5)^2 = 25$

Answer: B

22) The circumference of the circle given in the figure is



A) 6π
B) 9π
C) 3π
D) 12π

Answer: A

23) If $g^2 + f^2 - c = 0$ then the circle reduces to

A) a line
B) a point
C) two points
D) none of these

Answer: B

24) In the equation of a circle the coefficient of x^2 and y^2 are

A) Positive
B) Negative
C) Equal
D) Unequal

Answer: C

25) The equation of a circle is an equation of

A) Second degree in x
B) Second degree in y
C) First degree in x and y
D) Second degree in x and y

Answer: D

26) In the equation of a circle there is no term involving

A) x
B) y
C) xy
D) x^2

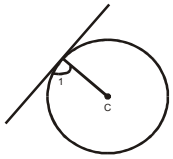
Answer: C

27) The equation $3x^2 + 3y^2 - 213x + 97y + 329 = 0$ represents a

A) Line
B) Circle
C) Ellipse
D) Parabola

Answer: B

28) In the figure the measure of $\angle 1$ is



A) 45^o
B) 60^o
C) 90^o
D) 120^o

Answer: C

29) The equation of the tangent to the circle $x^2 + y^2 = 8$ at the point (2, 2) is

A) $2x + y = 8$
B) $x - y = 4$
C) $x + y = 2$
D) $2x + y = 4$

Answer: A

30) If $x^2 + y^2 = 4$ represents a circle then the point (-2, 0) lies

A) Inside the circle
B) Outside the circle
C) On the circle
D) None of these

Answer: C

31) If a body is moving with a uniform angular speed around a circular path then the linear velocity of the body is directed along

A) The circular path
B) The normal to the path
C) The tangent to the path
D) None of these

Answer: C

9. Conic Section II, Parabola, Ellipse and Hyperbola

1) If the conic is a parabola then the value of eccentricity is

A) 0
B) 1
C) less than 1
D) greater than 1

Answer: B

2) If e = 1 then the conic is a

A) Circle
B) Parabola
C) Ellipse
D) Hyperbola

Answer: B

3) If e < 1 then the conic is

A) a circle
B) a parabola
C) an ellipse
D) a hyperbola

Answer: C

4) If e > 1 then the conic is

A) a circle
B) a parabola
C) an ellipse
D) a hyperbola

Answer: D

5) Locus of points in a plane, the distance of each of which from a fixed point is equal to its distance from a fixed straight line in the plane is called

A) a circle
B) a parabola
C) an ellipse
D) a hyperbola

Answer: B

6) Locus of points in a plane, the distance of each of which from a fixed point is less than its distance from a fixed line in the plane is called

A) a circle
B) a parabola
C) an ellipse
D) a hyperbola

Answer: C

7) Locus of points in a plane, the distance of each of which from a fixed point is greater than its distance from a fixed line in the plane is called

A) a circle
B) a parabola
C) an ellipse
D) a hyperbola

Answer: D

8) the vertex of the parabola $y^2 = -8x$ is

A) (-2, 0)
B) (2, 0)
C) (0, 0)
D) (0, -2)

Answer: C

9) The axis of the parabola $x^2 = -4y$ is

A) x-axis
B) y-axis
C) x and y-axis
D) none of these

Answer: B

10) The equation of the axis of the parabola $y^2 = 16x$ is

A) $x - y = 0$
B) $x + y = 0$
C) $x = 0$
D) $y = 0$

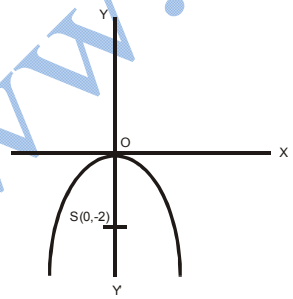
Answer: D

11) The equation of the latus rectum of the parabola $y^2 = -16x$ is

A) $x = 4$
B) $y = -4$
C) $y - 4 = 0$
D) $x + 4 = 0$

Answer: D

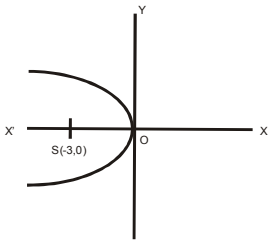
12) the equation of the parabola given in the figure is



A) $x^2 + 8y = 0$
B) $y^2 = -8x$
C) $y^2 = 8y$
D) $x^2 = 8y$

Answer: A

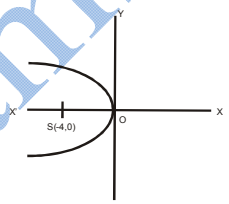
13) the length of the latus rectum of the parabola given in the figure is



A) 3
B) – 12
C) 6
D) 12

Answer: D

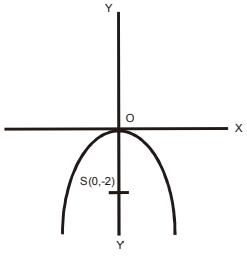
14) The equation of the parabola given in the figure is



A) $x^2 = -16y$
B) $x^2 = 16y$
C) $y^2 = -16x$
D) $y^2 = 16x$

Answer: C

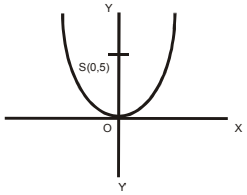
15) The length of the latus rectum of parabola given in the figure is



A) 4
B) 8
C) 2
D) –8

Answer: B

16) the equation of the latus rectum of the parabola given in the figure is



A) x = 5
B) y –5 = 0
C) x = -5
D) y = -5

Answer: B

17) The coordinates of the focus of the parabola $(x – 3)^2 = 4(y – 2)$ is

A) (0, 3)
B) (0, 2)
C) (3, 3)
D) (3, 2)

Answer: C

18) The coordinates of the vertex of the parabola $(x – 5)^2 = 4(y – 4)$ is

A) (0, 5)
B) (0, 4)
C) (4, 5)
D) (5, 4)

Answer: D

19) The equation of the axis of the parabola $(x – 3)^2 = 2(y + 4)$ is

A) x = -3
B) x – 3 = 0
C) y + 4 = 0
D) y = 4

Answer: B

20) The equation of the Directrix of the parabola $(x – 3)^2 = 4(y – 2)$ is

A) x = 1
B) y = 2
C) y – 1= 0
D) y = -1

Answer: C

21) The equation of the latus rectum of the parabola $(x +1)^2 = 4(y – 2)$ is

A) y – 3 = 0
B) y = -3
C) x = 3
D) x = -3

Answer: A

22) the equation of the tangent at the vertex of the parabola $(x + 3)^2 = 4(y – 2)$ is

A) x = -3
B) y = 0
C) y – 2 = 0
D) y = -2

Answer: C

23) The coordinates of the vertex of the parabola $(y – 3)^2 = 4(x – 1)$ is

A) (0, 0)
B) (3, 1)
C) (1, 3)
D) (-3, -1)

Answer: C

24) The equation of the circle whose diameter is the latus rectum of the parabola $x^2 = 4y$ is

A) $(x – 2)^2 + (y – 1)^2 = 4$
B) $x^2 + (y – 1)^2 = 2$
C) $x^2 + (y + 1)^2 = 4$
D) $x^2 + (y – 1)^2 = 4$

Answer: D

25) In the ellipse $\frac{x^2}{4} + \frac{y^2}{9} = 1$ the length of the major axis is

A) 3
B) 2
C) 6
D) 9

Answer: C

26) In the ellipse $\frac{x^2}{9} + \frac{y^2}{16} = 1$ the length of minor axis is

A) 3
B) 6
C) 9
D) 4

Answer: B

27) In an ellipse the mid point C of the major axis is called
A) The center of the ellipse
B) Focus of the ellipse
C) Vertex of the ellipse
D) Second focus

Answer: A

28) The curve of the parabola $y^2 = 4ax$ is symmetrical with respect to

A) Origin
B) X-axis
C) Y-axis
D) Both the axis

Answer: B

29) The curve of the ellipse $\frac{x^2}{9} + \frac{y^2}{4} = 1$ is symmetrical about

A) the x-axis
B) the y –axis
C) the origin
D) all A, B, C are true

Answer: D

30) In the ellipse $\frac{x^2}{8}+\frac{y^2}{6}=1$, the value of eccentricity is

A) $\frac{1}{3}$
B) $\frac{2}{3}$
C) $\frac{3}{2}$
D) $\frac{1}{2}$

Answer: D

31) If one of the foci of an ellipse is S(1, 0), then the distance between the two foci is (center of the ellipse lies at the origin)

A) 3
B) 2
C) 4
D) $\sqrt{2}$

Answer: B

Chapter 6: Sequences & Series

1) The general term of the sequence 2/1, 3/2, 4/3, …. is an =

A) $\frac{n+1}{n}$

B) $\frac{n}{n+1}$

C) $\frac{n}{n-1}$

D) $\frac{n-1}{n}$

Answer: A

2) If a, a+d, a+2d, …… is A.P, then an =

A) a + nd
B) a – nd
C) a + (n – 1)d
D) a + (n + 1)d

Answer: C

3) $\frac{a^{n+1}+b^{n+1}}{a^n+b^n}$ is arithmetic mean between a and b if n =

A) –1
B) 1
C) 0
D) 2

Answer: C

4) If A,. G, H are A.M, G.M, and H.M between two numbers, then

A) A < G < H
B) A < G > H
C) A > G > H
D) A > G < H

Answer: C

5) The harmonic mean between two numbers a and b is

A) $\pm\sqrt{ab}$

B) $\frac{a+b}{2}$

C) $\frac{2ab}{a+b}$

D) $\frac{2ab}{a-b}$

Answer: C

6) The arithmetic mean between 4 and 6 is

A) $\sqrt{24}$

B) $-\sqrt{24}$

C) 24/5

D) 5

Answer: D

7) If a is the first term and r < 1 is common ratio of G.P, then Sn =

A) $\frac{a(1-r^n)}{1-r}$

B) $\frac{a(1+r^n)}{1+r}$

C) ar^n

D) $\frac{a(1-r^n)}{1+r}$

Answer: A

8) An infinite geometric series is convergent if

A) $|r|<1$

B) r > 1

C) r = 1

D) Both B and C are correct

Answer: A

9) If a is the first term and r is the common ration of G.P then an =

A) ar^{n-1}

B) ar^{n+1}

C) $\frac{a(1-r^n)}{1-r}$

D) $\frac{a(1+r^n)}{1+r}$

Answer: A

10) $\frac{a^{n+1}+b^{n+1}}{a^n+b^n}$ is H.M between a and b if

A) n = 0
B) n = 1
C) n = -1
D) n = 2

Answer: C

11) If a is the first term and r is common ratio such that r < 1, then S_∞ =

A) $\frac{a}{1-r}$

B) $\frac{a}{1+r}$

C) $\frac{a(1-r^n)}{1-r}$

D) $\frac{a(1+r^n)}{1+r}$

Answer: A

12) The harmonic mean between 9 and 11 is

A) 10

B) $\pm\sqrt{99}$

C) $-\sqrt{99}$

D) 99/5

Answer: D

13) If A, G, H are arithmetic mean, geometric and harmonic mean between a and b, then

A) $G^2 = AH$

B) $A^2 = GH$

C) $H^2 = AG$

D) None of these

Answer: A

14) -1, 1, -1, 1, …. is

A) Arithmetic Sequence

B) Geometric Sequence

C) Alternating Sequence

D) Harmonic Sequence

Answer: C

15) The geometric mean between 8/9, 9/8 is

A) + 1

B) – 1

C) ± 1

D) $\frac{8}{17}$

Answer: C

16) A sequence is a function whose domain is

A) the set of rational numbers

B) The set of irrational numbers

C) The set of integers

D) The set of natural numbers

Answer: D

17) The geometric mean between a and b is

A) $\frac{a+b}{2}$

B) $\pm\sqrt{ab}$

C) $\frac{2ab}{a+b}$

D) $\frac{a+b}{2ab}$

Answer: B

18) The arithmetic mean between a and b is

A) $\frac{2ab}{a+b}$

B) $\frac{a+b}{2ab}$

C) $\frac{a+b}{2}$

D) $\pm\sqrt{ab}$

Answer: C

19) Which of the following series is convergent.

A) 2 – 6 + 18 - ……

B) 8 + 4 + 2 + …….

C) 5 + 10 + 20 + …….

D) 3/2 + 3 + 6 + ……..

Answer: B

20) If a = 3, r = 2/3, then sum of infinite S_∞ =

A) 9

B) $\frac{9}{2}$

C) $\frac{2}{9}$

D) $\frac{3}{2}$

Answer: A

21) If 2 + 1 + ½ + ….. is infinite geometric series then S_∞

A) 2

B) 4

C) ½

D) ¼

Answer: B

22) The population of a town increases geometrically at the rate of 4% per year. If the present population is 100,000, then population after 4 years will be

A) $100,000\ (1 + .04)^3$

B) $100,000\ (1 + .04)^4$

C) $100,000\ (1 – 0.04)^3$

D) $100,000\ (1 – 0.04)^4$

Answer: B

23) The sum of n terms of arithmetic series S_n =

A) n/2[2a + (n – 1)d]
B) ar^{n-1}
C) $\frac{a(1-r^n)}{1-r}$
D) a + (n – 1)d

Answer: A

24) The two arithmetic means between 5 and 35 are

A) 15, 25
B) 10, 20
C) 10, 15
D) 10, 25

Answer: A

25) If 2b – 1, 4b + 1, 15b – 3 is a geometric series, then b =

A) 4
B) 3
C) 2
D) 1

Answer: C

26) Which of the following is a geometric series?

A) 5, 7, 9, 11, …..
B) 3, 5, 7, 9…….
C) 1, 1/3, 3, 9, …..
D) 9, 3, 1, 1/3, ……

Answer: D

27) The general term of the sequence 3, 6, 9, 12 …. is

A) n
B) 2n
C) 3n
D) n^2

Answer: C

28) Which of the following is harmonic sequence?

A) 3, 5, 7 ……
B) ½, ¼, 1/8, …..
C) ½, 1/3, ¼ ……
D) 3, 9, 27 …..

Answer: C

Chapter 7 Permutation, Combination And Probability

1) If n is a positive integer then n ! =

A) n (n + 1) (n + 2) …… (n + n)
B) n (n – 1) (n – 2) …. 3.2.1
C) $\frac{n(n+1)}{2}$
D) $\frac{n(n-1)}{2}$

Answer: B

2) If ${}^{n}P_{2} = 20$ then n =

A) 4
B) 5
C) 6
D) 10

Answer: B

3) ${}^{n}C_{r} =$

A) $\frac{n!}{(n-r)!}$
B) $\frac{n!}{(n-r)!r!}$
C) $\frac{n!}{r!}$
D) $\frac{r!}{(n-r)!}$

Answer: B

4) ${}^{n}P_{r} =$

A) $\frac{n!}{r!}$
B) $\frac{r!}{(n-r)!}$
C) $\frac{n!}{(n-r)!}$
D) $\frac{n!}{(n-r)!r!}$

Answer: C

5) ${}^{n}P_{o} =$

A) n!
B) n
C) 1
D) 0

Answer: C

6) ${}^{10}P_{2} =$

A) 90
B) 10
C) 8
D) 80

Answer: A

7) If ${}^{n}C_{6} = {}^{n}C_{10}$ then n =

A) 4
B) 6
C) 10
D) 16

Answer: D

8) The number of words which can be formed out of the word "ASSASSINATION", when all the letters are used in each word are

A) $\binom{13}{4,3,2,2,1,1}$
B) 13!
C) $\frac{4!}{13!}$
D) $\frac{13}{4!}$

Answer: A

9) The numbers of diagonals in ten sided figure is

A) 10
B) ${}^{10}C_{2}$
C) ${}^{10}C_{2} - 10$
D) 45

Answer: C

10) The number of ways a hockey eleven can be selected out of 15 players if it includes a particular player.

A) ${}^{15}C_{11}$
B) ${}^{14}C_{11}$
C) ${}^{14}C_{10}$
D) ${}^{15}C_{10}$

Answer: C

11) ${}^{5}P_{0} =$

A) 5
B) 0

C) 15
D) 1

Answer: D

12) The number of possible permutations of the letters of the word, "ADDING" having two D'S together.

A) 5!
B) 3!
C) 4!
D) 25

Answer: A

13) For any event A

A) $0 \le P(A) \le 1$
B) $-1 \le P(A) \le 1$
C) $-2 \le P(A) \le 2$
D) $0 \le P(A) \le 2$

Answer: A

14) The number of words that can be formed from the letters of the word, "PAKPATTAN" are

A) 9!
B) ${}^9C_7$
C) ${}^9P_7$
D) $\frac{9!}{3!2!2!}$

Answer: D

15) The number of words that can be formed from the letters of the word, "COMMITTEE" are

A) ${}^9P_9$
B) ${}^9C_9$
C) $\frac{9!}{2!2!2!}$
D) 9

Answer: C

16) The events A & B are said to be disjoint if $A \cap B$ is

A) ϕ
B) A
C) B
D) $A \cup B$

Answer: A

17) A dice is thrown then the probability to get an even number is

A) 4/5
B) 3/5
C) 2/3
D) ½

Answer: D

18) A slip is picked out of 8 slips numbered from 1 to 8 then the probability to get number 4 is

A) 8
B) 1/8
C) ½
D) 3/8

Answer: B

19) The three digit numbers that can be formed from 0, 1, 2, 3, 4, when no digit is repeated are

A) 48
B) 36
C) 24
D) 10

Answer: A

20) The number of distinct permutations from the letters of the word, "ARTICLE" using all the letters are

A) 7
B) 7!
C) 49
D) 59

Answer: B

21) Teams A & B are playing football match. The probability that A will win is 4/13 that of B is 5/13. The probability that the match will end in a draw is

A) 5/13
B) 4/13
C) 9/13
D) 3/13

Answer: B

22) A & B are mutually exclusive events the $P(A \cup B) =$

A) $P(A) \cup P(B)$
B) $P(A) + P(B)$
C) $P(A) + P(B) - P(A \cap B)$
D) $P(A) - P(B)$

Answer: B

23) If $A \subset S$ then $P(A') =$

A) $1 + P(A)$
B) $1 - P(A)$
C) $\frac{1}{P(A)}$
D) P(A)

Answer: B

24) The probability that Aslam was not born in a month which begins with the letter "J" is ¾ , then the probability that he was born in January, June, July is

A) 5/4
B) ¾
C) ¼
D) 7/4

Answer: C

25) A bag contains 30 balls, some of which are red and the remaining are blue. The probability of drawing red is 1/6, then the number of blue balls are

A) 25
B) 20
C) 48
D) 16

Answer: A

26) The number of diagonals in 8 – sided figure is

A) 64
B) 20
C) 48
D) 16

Answer: B

Chapter 7. Vectors

1) The triangle law for vector addition is equivalent to the

A) Commutative law
B) Associative law
C) Parallelogram law
D) First law

Answer: C

2) The position vector of a point P(x, y, z) is denoted by

A) $\overrightarrow{PQ}$
B) $\overrightarrow{OP}$
C) $\overline{P}$
D) $\overrightarrow{AP}$

Answer: B

3) If Cosα, Cosβ, Cosχ are the directions Cosines of a vector then

A) Cosα + Cosβ + Cos χ = 1
B) $Cos^2\alpha + Cos^2\beta + Cos^2\chi = 0$
C) $Cos^2\alpha + Cos^2\beta + Cos^2\chi = 1$
D) Cosα + Cosβ + Cos χ = 0

Answer: C

4) The numbers proportional to the direction cosines of a vector are called

A) Vector numbers
B) Scalar numbers
C) Direction numbers
D) Rational numbers

Answer: C

5) Two or more vectors are said to be collinear if they are

A) perpendicular to the same line
B) parallel to the same line
C) intersecting the same line
D) not parallel to the same line

Answer: B

6) Two or more vectors are said to be coplanar if they

A) are perpendicular to the same plane
B) are not parallel to the same plane
C) lie in the same plane
D) do not lie in the same plane

Answer: C

7) The component of $\overline{a} = 3i + 4j$ in the direction o f z-axis is

A) 3
B) 4
C) 0
D) 7

Answer: C

8) the unit vector in the direction o f the vector $\overline{a} = i + j + k$ is

A) $\frac{\overline{a}}{3a}$
B) $\frac{\overline{a}}{3}$
C) $\frac{\overline{a}}{\sqrt{3}}$
D) $\frac{\overline{a}}{\sqrt{2}}$

Answer: C

9) The vectors $\overline{a} = i + 2j + 3k$ *and* $\overline{b} = 2i + 4j + 6k$ are

A) Perpendicular
B) Parallel
C) Not parallel
D) None of these

Answer: B

10) The join of the mid points of the consecutive sides of any quadrilateral is

A) a square
B) a rectangle
C) a parallelogram
D) none of these

Answer: C

11) If A (1, 2, 3) and B (3, 4, 5) are two points then the mid pint of $\overline{AB}$ is

A) (4, 3, 5)
B) (4, 6, 8)
C) (4, 5, 6)
D) (2, 3, 4)

Answer: D

12) The direction Cosines of $\overline{i}$ are

A) 0, 0, 1
B) 0, 1, 0
C) 1, 0, 0
D) 1, 1, 0

Answer: C

13) The direction cosines of the vector $\overline{a} = \overline{i} + \overline{j}$ are

A) 1, 1, 0

B) $\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}, 1$

C) $1, \frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}$

D) $\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}, 0$

Answer: D

14) The Norm of the vector $\bar{a} = \bar{i} - \bar{j}$ is

A) 0
B) 2
C) $\sqrt{2}$
D) 1

Answer: C

15) If $\bar{a} = 3i + j - k \quad and \quad \bar{b} = \lambda i - 4j + 4k$ are parallel then the value of λ is

A) 4
B) 8
C) 12
D) – 12

Answer: D

11. Products of Vectors

1) If $\bar{a}$ is a unit vector then the value of $\bar{a}.\bar{b}$ is

A) 1
B) $|\bar{a}|\cos\theta$
C) $|\bar{b}|\cos\theta$
D) 0

Answer: C

2) The projection of $\bar{a}$ in the direction of $\bar{b}$ is

A) $|\bar{b}|\cos\theta$
B) ab Cosθ
C) ab
D) $|\bar{a}|\cos\theta$

Answer: D

3) If $\bar{a} = i + j$ and $\bar{b} = i + k$ are two vectors then inner product of $\bar{a}$ and $\bar{b}$ are

A) 1
B) – 1
C) 0
D) 2

Answer: A

4) The inner product of $\bar{i}$ and $\bar{j}$ is

A) 1
B) – 1
C) 0
D) 2

Answer: C

5) If $l_1 l_2 + m_1 m_2 + n_1 n_2 = 0$ then the angle between the two vectors is

A) 45^o
B) 60^o
C) 90^o
D) 180^o

Answer: C

6) If the right bisectors of the two sides of a triangle pass through the origin then the right bisector of the third side will pass through the point

A) (1, 1)
B) (1, 2)
C) (1, 3)
D) (0, 0)

Answer: D

7) The equation 2x + 3y + 6z = 35 represents

A) a line
B) a circle
C) a plane
D) a parabola

Answer: C

8) If $\bar{a}$ is the position vector of a given point (1, 2, 3) and $\bar{\chi}$ is the position vector of any point (x, y, z) such that $|\bar{\chi} - \bar{a}| = 2$ then the locus of $\bar{\chi}$ describes

A) a circle
B) an ellipse
C) a plane
D) a sphere

Answer: D

9) the equation
$(x - 1)^2 + (y - 3)^2 + (z - 5)^2 = 25$ represents

A) a circle
B) a sphere
C) a plane
D) an ellipse

Answer: B

10) The coordinates of the center of the sphere $x^2 + y^2 + z^2 = 9$ is

A) (0, 0)
B) (3, 3, 0)
C) (0, 0, 0)
D) (0, 0, 3)

Answer: C

11) If $\bar{a}$ is the position vector of a given point (1, 1, 1) and $\bar{\chi}$ is the position vector of any point (x, y, z) such that $\left|\bar{\chi} - \bar{a}\right|.\bar{a} = 0$ then the locus of $\bar{\chi}$ describes.

A) a sphere
B) a circle
C) an ellipse
D) a plane

Answer: D

12) The distance from the origin to the plane

A) 7
B) 0
C) 1
D) 2

Answer: C

13) The contact in which the point coordinates are all positive is called

A) 1st octant
B) 2nd octant
C) 4th octant
D) 8th octant

Answer: A

14) The point (3, 5, 8) lies in the

A) 3rd octant
B) 5th octant
C) 8th octant
D) 1st octant

Answer: D

15) The three coordinate's planes divide all space into

A) 3 cells
B) 4 cells
C) 8 cells
D) 6 cells

Answer: C

16 If $\bar{a} = i + 2j + k, \quad \bar{b} = 3i + j - k \ \ and \ \ \bar{c} = i + 2j + k$ are the co-terminus edges of a parallelepiped then its volume is

A) 0
B) 8
C) 27
D) 1

Answer: A

17) If $\bar{a} = i + 2j + 3k$, $\bar{b} = 2i + 4j + 6k$ and $\bar{c} = 3i - j + k$ then the value of $\bar{a}.\bar{b} \times \bar{c}$ is

A) 28
B) 26
C) 0
D) 24

Answer: C

18) If volume of a parallelepiped with $\bar{a}, \bar{b}, \bar{c}$ as co-terminus edges is 24 the volume of the tetrahedron with the same edges is

A) 48
B) 12
C) 6
D) 4

Answer: D

THE END

Chapter 8 M.Induction And Binomial Induction

1) 1 + 2 + 3 …….+ n =

A) $\frac{n^2(n+1)^2}{4}$

B) $\frac{n(n+1)}{2}$

C) $\frac{n(n+1)(2n+1)}{6}$

D) $\frac{n^2}{2}$

Answer : B

2) The number of terms in the expansion of $(2x + y)^6$ are

A) 6
B) 7
C) 8
D) 14

Answer: B

3) $1^2 + 2^2 + 3^2 + ….. n^2$ =

A) $\frac{n(n+1)}{2}$

B) $\frac{n(n+1)(2n+1)}{6}$

C) $\frac{n^2(n+1)^2}{4}$

D) $\frac{n^2}{2}$

Answer: B

4) $1^3 + 2^3 + 3^3 + ….. n^3$ =

A) $\frac{n^2}{2}$

B) $\frac{n(n+1)(2n+1)}{6}$

C) $\frac{n(n+1)}{2}$

D) $\frac{n^2(n+1)^2}{4}$

Answer: D

5) If x is so small that its square and higher powers be neglected then $(1 + 3x)^{-2}$ =

A) 1 + 9x
B) 1 – 9x
C) 1 + 6x
D) 1 – 6x

Answer: D

6 For every positive integers n 1 + 5 + 9 + …….. + (4n – 3) is

A) n(2n – 1)
B) (2n – 1)
D) n – 1
D) n

Ans: A

7 When we expand $(a + 2b)^2$ then

A) $a^5 + 10a^4b + 40a^3b^2 + 80a^2b^3 + 80ab^4 + 32b^5$
B) $a^5 + a^4b + a^3b^2 + a^2b^3 + ab^4 + b^5$
C) $5a^5 + 4a^4b + 3a^3b^2 + 2a^2b^3 + 1ab^4 + b^5$
D) None of above

Ans: A

8 The term involving x^4 in the expansion of $(3 – 2x)^7$ is

A) 120
B) 1512
C) 1250
D) 15120

Ans: D

9 if $1 + \frac{1}{4} + \frac{1.3}{4.8} + \frac{1.3.5}{4.8.12} + ……..$ +R is

A) $\sqrt{2}$
B) $\sqrt{3}$
C) $\sqrt{5}$
D) $\sqrt{7}$

Ans: A

10 For each natural number n. 1 + 3 + 5 + …… (2n – 1) = _____

A) n^2
B) n
C) n^3
D) n^4

Ans: A

11 $(a + x)^n = \sum_{r=0}^{n} \binom{n}{r} a^{n-r}$ where a and x are:

A) imaginary
B) Rational
C) Irrational
D) Real numbers

Ans: D

12 Number of terms in the expansion of $(a + x)^n$ is

A) n – 1
B) n + 1
C) n + 2
D) n + 3

Ans: B

13 The expansion of $(1 - \frac{5}{8}x)$ is valid when :

A) $x < \frac{8}{5}$

B) $x < \frac{5}{8}$

C) $|x| < \frac{8}{5}$

D) $|x| > \frac{8}{5}$

Ans: B

14 ${}^{n}C_{2}$ = exists when n is _____

A) $n > 2$

B) $n \leq 2$

C) $n < 2$

D) $n \geq 2$

Ans: D

15 1^{st} four terms of the expansion $(1 - X)^{-2}$ are

A) $1 + 2x + 3x^2 + 4x^3$

B) $3x^2 + 2x + 1$

C) $1 + 3x + 4x^2 + 5x^3$

D) None of these

Ans: D

16 The expansion $(1 + X)^{-3}$ holds when

A) $|x| > 1$

B) $|x| < 1$

C) $|x| > 1$

D) $x < 1$

Ans: A

17 The middle term of the expansion $(1 + 2x)^6$ is _____

A) 1^{st} term

B) 4^{th} term

C) 2^{nd} term

D) 3^{rd} term

Ans: B

18 If n is add the expansion $(a + x)^n$ has _____ _____ middle terms.

A) 2

B) 3

C) 4

D) 5

Ans : A

19 The general term of expansion $(a + x)^n$ is:

A) a^{n-r}

B) $\binom{n}{r}$

C) $\binom{n}{r} a^{n-r} x^r$

D) None of above

Ans: C

Chapter No. 9

Fundamentals of Trigonometry

1. Direction of Qibla is found by using _____

a) Plane Geometry
b) Spherical Trigonometry
c) Plane Trigonometry
d) Analytical Geometry
e) None of these
Answer: c

2. If a circle is divided into 360 parts, then the angle subtended by each part at the center of the circle is called _____

a) 1 radian
b) 1 degree
c) 1 angstrom
d) 1 minute
e) None of these
Answer: b

3. The union of two non-collinear rays which have a common endpoint is called the _____

a) Angle
b) Radian
c) Degree
d) Minute
e) Second
Answer: a

4. One degree is denoted by _____

a) 1 rad
b) 1'
c) 1"
d) 1^{o}
e) None of these
Answer: d

5. 1rt. angle = _____

a) 90^{o}
b) 180^{o}
c) 270^{o}
d) 190^{o}
e) None of these
Answer: a

6. The 60^{th} part of one degree is called one _____

a) centimeter
b) radian
c) degree
d) minute
e) none of these
Answer: d

7. Measure of the central angle of an are of a circle whose length is equal to the radius of the circle is known as _____

a) 1 degree
b) 1 radian
c) 1 rt. angle
d) All of these
e) None of these
Answer: b

8. The circumference of a circle r is considered as _____

a) $2\pi r$
b) πr
c) $3\pi r$
d) $4\pi r$
e) None of these
Answer: a

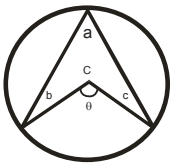
9. 1 radian = _____

a) $57°17'45''$
b) 47^{o}
c) 37^{o}
d) 38^{o}
e) None of these
Answer: a

10. 1^{o} = _____

a) $60'$
b) $60''$
c) $3600'$
d) $360'$
e) None of these
Answer: a

11. In the given figure if C is the center of the circle, then angle θ is _____



a) 2a
b) a + b
c) a + b + c
d) 2π - a
e) 2b – 2c
Answer: a

12. The 60^{th} part of one minute is called one _____

a) centimeter
b) radian
c) degree
d) minute
e) second
Answer: e

13. 180^o = _____
a) π radian
b) 2 π radian
c) $\frac{\pi}{2}$
d) $\frac{3\pi}{4}$
e) None of these
Answer: a

14. An arc PQ is subtends and angle 60o at the center of a circle of radius 1 cm. The length PQ is _____
a) 60 cm
b) 30 cm
c) $\frac{\pi}{6}$ cm
d) $\frac{\pi}{3}$ cm
e) $\frac{\pi}{18}$ cm
Answer: d

15. One second is denoted by _____

a) 1 rad
b) 1′
c) 1″
d) 1°
e) None of these
Answer: c

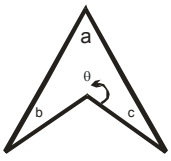
16. $\frac{\pi}{4}$ = _____

a) 30^o
b) 60^o
c) 90^o
d) 220^o
e) None of these
Answer: e

17. If $\theta = \frac{\pi}{6}$, $Cos\theta$ is _____

a) $\frac{1}{2}$
b) $-\frac{1}{2}$
c) $\frac{\sqrt{3}}{2}$
d) $-\frac{\sqrt{3}}{2}$
e) $\frac{\sqrt{2}}{2}$
Answer: c

18. In the given figure the angle θ is _____



a) $2\pi - a$

b) $2\pi - (a+b)$
c) $2\pi - (a+b+c)$
d) a + b + c
e) 2d – 2b
Answer: c

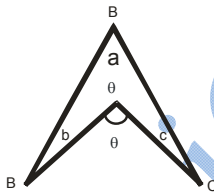
19. $1' =$ _____

a) 60^o
b) $60''$
c) $3600''$
d) 3600^o
e) None of these
Answer: b

20. What is the length of an arc of a circle of radius 5cm, whose central angle is of 140^o _____

a) 2.443 radians
b) 1.443 radians
c) 0.443 radians
d) 2 radians
e) None of these
Answer: a

21. In the given figure the angle a + b + c is _____

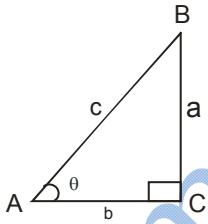


a) < BDC = θ
b) $\pi - \theta$
c) $2\pi - \theta$
d) $2\pi + \theta$
e) < B
Answer: c

22. Two right angles are the angle of measure _____

a) $180''$
b) $180'$
c) 60^o
d) 90^o
e) 180^o
Answer: e

23. For a right angled triangle ABC as shown in the figure we have Sin θ = _____

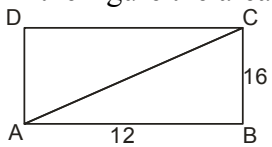


a) $\frac{a}{c}$
b) $\frac{c}{a}$
c) $\frac{c}{b}$
d) $\frac{b}{c}$
e) None of these
Answer: a

24. Four right angles are the angle of measure _____

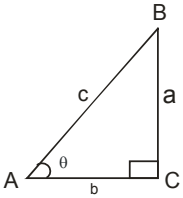
a) 90^o
b) 180^o
c) 270^o
d) 360^o
e) $360'$
Answer: d

25. In the figure the area of triangle ABC is



a) 28
b) 32
c) 96
d) 192
e) 182
Answer: c

26. For a right angled triangle ABC as shown in the figure, we have $Co\sec\theta =$ _____



a) $\frac{c}{a}$

b) $\frac{c}{b}$

c) $\frac{b}{c}$

d) $\frac{+c}{-c}$

e) None of these

Answer: a

27. The system of measurement in which the angle is measured in degrees, and its subunits, minutes and seconds is called _____

a) Circular system
b) Sexagesimal system
c) MKS system
d) CGS system
e) None of these

Answer: b

28. $Cot\theta =$ _____

a) $\frac{Sin\theta}{Cos\theta}$

b) $\frac{Cos\theta}{Sin\theta}$

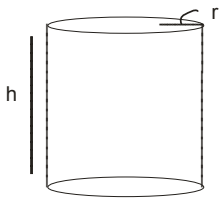
c) $\frac{1}{Sin\theta}$

d) $\frac{1}{Cos\theta}$

e) None of these

Answer: b

29. In the figure the surface area (shaded) of right circular cylinder is



a) $2\pi r^2 + 2\pi rh$

b) $2\pi r + \pi r^2 h$

c) $2\pi r^2$

d) πrh

e) $2\pi rh$

Answer: a

30. The system of measurement in which the angle is measured in radians is called _____

a) Circular system
b) Sexagesimal system
c) MKS system
d) CGS system
e) None of these

Answer: a

31. $Sec\theta =$ _____

a) $\frac{Sin\theta}{Cos\theta}$

b) $\frac{Cos\theta}{Cos\theta}$

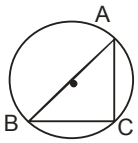
c) $\frac{1}{Sin\theta}$

d) $\frac{1}{Cos\theta}$

e) None of these

Answer: d

32. In the figure, the shaded area is given by



a) $25\pi/4 - 6$

b) $5\pi - 6$

c) $25/4\pi$

d) 6

e) 7π

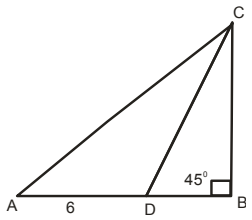
Answer: a

33. $16^{\circ}40'38'' =$

a) 140^{o}
b) 17^{o}
c) 16^{o}
d) $60038'$
e) $60038''$
Answer: e

34. $Sin^{2}\theta + Cos^{2}\theta =$ _____? For all values of angle.
a) 1
b) 0
c) $1 + Tan^{2}\theta$
d) -1
e) None of these
Answer: a

35. In the figure the length of AB is

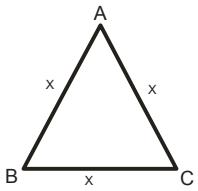


a) 7
b) $6 + \sqrt{2}$
c) $6 + 2\sqrt{2}$
d) 12
e) 13
Answer: a

36. $16^{o} =$ _____

a) 960^{o}
b) $960'$
c) $57600'$
d) $60038'$
e) $60038''$
Answer: b

37. In the figure the angle A is (AB = AC = X)



a) 50^{o}
b) 60^{o}
c) 90^{o}
d) 120^{o}
e) 180^{o}
Answer: b

38. Two right angles are equal to

a) $180'$
b) $180''$
c) $648000'$
d) $10800''$
e) $10800'$
Answer: e

39. The associated angle of 280^{o} is
a) 100^{o}
b) 10^{o}
c) 80^{o}
d) -80^{o}
e) 190^{o}
Answer: c

40. Cot 180^{o} = _____
a) 1
b) O
c) -1
d) ∞
e) -11
Answer: d

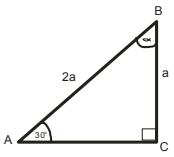
41. A radian is the measure of the central angle of an arc of a circle whose length is equal to the
a) half of radius of the circle
b) diameter of the circle
c) radius of the circle
d) one third of radius of the circle
e) none of these
Answer: c

42. Sec 180^{o} = _____

a) 1

b) 0
c) – 1
d) ∞
e) None of these
Answer: c

43. In the ΔABC the angle α is

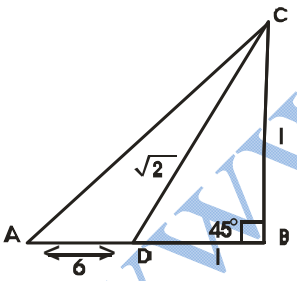


a) 30^o
b) 45^o
c) 60^o
d) 90^o
e) 180^o
Answer: c

44. The central angle of an arc of a circle whose length is equal to the radius of the circle is called the

a) degree
b) radian
c) minute
d) second
e) none of these
Answer: b

45. $\frac{c}{b}$ In the Δ ABC the angle γ is

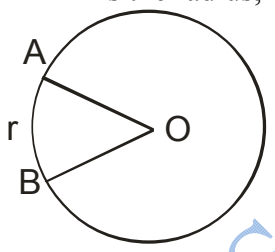


a) 30^o
b) 45^o
c) 45^o
d) 90^o
e) 120^o
Answer: a

46. Cosec 180^o =_____?
a) 1
b) 0
c) -1
d) ∞
e) 2^{-1}

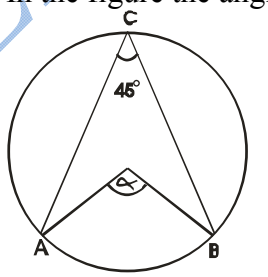
Answer: d

47. if r is the radius, m < AOB =



a) 1 radian
b) 1 degree
c) 1 minute
d) 1 second
e) None of these
Answer: a

48. In the figure the angle α is



a) 45^o
b) 60^o
c) 75^o
d) 90^o
e) -90^o
Answer: d

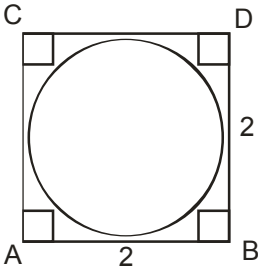
49. One minute is denoted by
a) 1rad
b) 1′
c) 1″
d) 1^o
e) None of these
Answer: b

50. Cos 270^o =___?
a) 1
b) 0
c) -1

d) ∞
e) $0-2$

Answer: b

51. The area of the shaded portion in the figure is



a) $4-\pi$
b) $4-2\pi$
c) 4π
d) 4
e) 4π - 2

Answer: a

52 Tan 270^o = _____?

a) 1
b) 0
c) -1
d) ∞
e) $\pi-2$

Answer: d

53 1^o =

a) 1 radian
b) 0.01745 radian
c) 0.5 radian
d) 2.5 radian
e) 1.01745 radian

Answer: b

54 Tan 30^o = _____?

a) $\frac{1}{\sqrt{3}}$
b) $\frac{\sqrt{3}}{2}$
c) $\frac{1}{2}$
d) $\frac{1}{\sqrt{2}}$
e) $-\frac{1}{\sqrt{2}}$

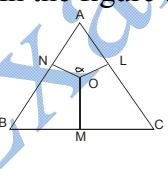
Answer: a

55 If an arc of length I of circle of radius r subtends an angle 0 radian at the center, then l =

a) $\frac{1}{r\theta}$
b) $\frac{r}{\theta}$
c) $\frac{\theta}{r}$
d) $r\theta$
e) None of these

Answer: d

56 In the figure the angle α is



a) 60^o
b) 120^o
c) 180^o
d) 240^o
e) 290^o

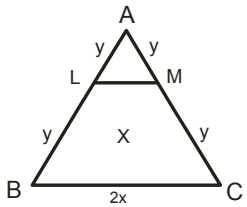
Answer: b

57 In the first quadrant $Sin\theta$ is _____

a) positive
b) negative
c) both
d) not defined
e) none of these

Answer: a

58 In the figure the length of LM is



a) x

b) 2x
c) 3x
d) 4x
e) 8π
Answer: a

59. Convert $\left(\frac{180}{\pi}\right)^{\circ}$ to radians

a) 0.94 radians
b) 1 radians
c) 3.97 radians
d) 4.57 radians
e) 3.54 radians
Answer: b

60. $1^{o} =$ _____

a) $\frac{\pi}{180}$ radians
b) $\frac{180}{\pi}$ radians
c) $\frac{1}{180\pi}$ radians
d) 180π radians
e) π radians
Answer: a

61 $\left(22\frac{1}{2}\right)^{\circ} =$

a) $\frac{\pi}{2}$ radians
b) $\frac{\pi}{4}$ radians
c) $\frac{\pi}{8}$ radians
d) 180π radians
e) π radians
Answer: c

62. Convert radian measure $\frac{4}{3\pi}$ to degree

a) 24.32^{o}
b) 24.97^{o}
c) 4.96^{o}
d) 1.97^{o}
e) 23.42^{o}
Answer: a

63. $\theta =$ _____

a) $\frac{1}{\phi}$
b) $\frac{1}{r}$
c) $\frac{r}{l}$
d) $\frac{\phi}{r}$
e) $\frac{r}{\phi}$
Answer: b

64. $\frac{5\pi}{4}$ radians =

a) 360^{o}
b) 335^{o}
c) 270^{o}
d) 225^{o}
e) 125^{o}
Answer: d

65. The radian measure of the angle at the center of circle of radius 12cm which cuts off an arc 18cm long.

a) 9.47 radians
b) 1.19 radians
c) 1.5 radians
d) 2.5 radians
e) None of these
Answer: c

66. $150^{o} =$

a) $\frac{5\pi}{6}$ radians
b) $\frac{2\pi}{3}$ radians
c) $\frac{\pi}{4}$ radians
d) 180π radians
e) π radians
Answer: a

67. The length of the arc cut off on a circle of radius 6cm by a central angle of $\frac{2\pi}{3}$ radians

a) 12.566cm
b) 10.033cm
c) 12.113cm
d) 9.156cm
e) 6.56cm
Answer: a

68. 80^o =

a) $\frac{5\pi}{6}$ radians
b) $\frac{4\pi}{9}$ radians
c) $\frac{\pi}{4}$ radians
d) 180π radians
e) π radians
Answer: b

69. The radius of the circle when l = 3cm, $\theta = 3.4$ radians.

a) 0.214 cm
b) 9.419 cm
c) 3.146 cm
d) 4.978 cm
e) None of these
Answer: e

70. In one hour, the minutes hand of a clock turns through

a) $\frac{5\pi}{6}$ radians
b) $\frac{4\pi}{9}$ radians
c) $\frac{\pi}{4}$ radians
d) 180π radians
e) 2π radians
Answer: e

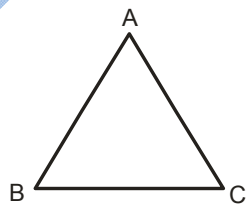
71. In the second quadrant $Sin\theta$ is _____

a) positive
b) negative
c) both
d) not defined
e) none of these
Answer: a

72. In one hour, the hours hand of a clock turns through

a) $\frac{\pi}{12}$ radians
b) $\frac{\pi}{8}$ radians
c) $\frac{\pi}{6}$ radians
d) π radians
e) 2π radians
Answer: c

73. If the measure of two angles of a ΔABC is 30^o and 70^o then the 3rd angle is



a) 30^o
b) 70^o
c) 80^o
d) 100^o
e) 210^o
Answer: c

74. In one hour, the minutes hand of a clock turns through

a) 360^o
b) 180^o
c) 90^o
d) 60^o
e) 30^o
Answer: a

75. $Sin\theta = \frac{Perpendicular}{?}$

a) base

b) hypotenuse
c) cos θ
d) tan θ
e) none of these
Answer: b

76. In 15 minutes, the minutes hand of a clock turns through

a) 360^o
b) 180^o
c) 90^o
d) 60^o
e) 30^o
Answer: c

77. $Cos\theta = \frac{1}{?}$

a) $\sin\theta$
b) $\tan\theta$
c) cos θ
d) $\sec\theta$
e) none of these
Answer: e

78. In the 2nd quadrant Sec θ is _____?

a) positive
b) negative
c) both
d) not defined
e) – 1
Answer: b

79. In the 2nd quadrant Cot θ is _____ ?

a) positive
b) negative
c) both
d) not defined
e) < 1
Answer: b

80. In 15 minutes the hours hand of a clock turns through

a) 7.5^o
b) 15^o
c) 30^o
d) 60^o
e) 120^o
Answer: a

81. The radian measure of the central angle of an arc 50cm log on a circle of radius 25m is

a) 3
b) 2
c) 1
d) 0.5
e) None of these
Answer: b

82. In the 3rd quadrant Sin θ is _____ ?

a) positive
b) negative
c) both
d) not defined
e) > 0
Answer: b

83. Two cities whose longitudes are 30^oE and 40^oW on the equator are apart

a) 1000 km
b) 2000 km
c) 2500 km
d) 3351 km
e) 7819.09 km
Answer: e

84. $Co\sec\theta = \frac{1}{?}$

a) $\cot\theta$
b) $\tan\theta$
c) $\sin\theta$
d) $\sec^2\theta$
e) $1 - \sin\theta$
Answer: c

85. Two cities whose longitudes are 10^oE and 20^oW on the equator are apart.

a) 1000 km
b) 2000 km
c) 2500 km
d) 3351 km

e) 6702 km
Answer: d

86. In the 3rd quadrant Cosec θ is _____ ?

a) positive
b) negative
c) both
d) 0
e) None of these
Answer: b

87. A railway train is running on a circular track of radius 500 meters at the rate of 30 km per hour, it will turn in 10 seconds through an angle.

a) $4^\circ 46' 28''$
b) $9^\circ 32' 57''$
c) $18^\circ 46' 28''$
d) 30^o
e) 60^o
Answer: b

88. The pendulum of a clock is 30 cm long and it swings through an angle of 30^o each second. How far does the tip of the pendulum move in 1 second.

a) 10 cm
b) 15.71 cm
c) 20.94 cm
d) 28.65 cm
e) 40 cm
Answer: b

89. A railway train is running on a circular track of radius 1000 meters at the rate of 30 km per hour, it will turn in 10 seconds through an angle

a) $4^\circ 46' 28''$
b) $9^\circ 32' 57''$
c) $18^\circ 46' 28''$
d) 30^o
e) 60^o
Answer: a

90. The pendulum of a clock is 40cm long and it swings through an angle of 30^o each second. How far does the tip of the pendulum move in 1 seconds?

a) 10cm
b) 15.71cm
c) 20.94cm
d) 28.65cm
e) 40cm
Answer: d

91. In the fourth quadrant Cosec θ is _____ ?

a) positive
b) negative
c) both
d) 0
e) None of these
Answer: b

92. A circular wire of radius 2cm is cut straightened and then bent so as to lie along the circumference of a hoop of radius 24cm. the measure of the angle subtended at the center of the hoop is

a) 15^o
b) 30^o
c) 25^o
d) 60^o
e) 90^o
Answer: b

93. $\sec^2\theta - \tan^2\theta =$ _____

a) -1
b) $\operatorname{cosec}\theta$
c) $\tan\theta$
d) 1
e) -11
Answer: d

94. The area of a sector of a circular region of radius r and the central angle of the sector θ radians is

a) $\frac{1}{2}r\theta^2$
b) $\frac{1}{2}r^2\theta$

c) $\frac{1}{2}r\theta$

d) $r^2\theta$

e) $r\theta^2$

Answer: b

95. The area of a sector with a central angle of 1 radian in a circular region whose radius is 2m.

a) 2m^2

b) 1m^2

c) 0.5m^2

d) $\frac{\pi}{6}\text{m}^2$

e) $\frac{\pi}{3}\text{m}^2$

Answer: a

96. The area of a sector with a central angle of 0.5 radians in a circular region whose radius is 2m is

a) $\frac{\pi}{2}\text{m}^2$

b) $\frac{\pi}{3}\text{m}^2$

c) $\frac{\pi}{6}\text{m}^2$

d) 2m^2

e) 1m^2

Answer: e

97. An arc AB of length 5cm is marked on a circle of radius 3cm. the area of the sector bounded by this arc and the radii from A and B is

a) $7.5\ \text{cm}^2$

b) $7.5\ \text{m}^2$

c) $75\ \text{m}^2$

d) $75\ \text{cm}^2$

e) None of these

Answer: a

98. $\cos^2\frac{\theta}{2} + \sin^2\frac{\theta}{2} =$ _____

a) $\frac{1}{4}$

b) $\frac{1}{2}$

c) 2

d) 0

e) 1

Answer: e

99. In which quadrant does the terminal side lie if $\sin\theta > 0$ and $\tan\theta$ _____ ?

a) 1^{st}

b) 2^{nd}

c) 3^{rd}

d) 4^{th}

e) None of these

Answer: a

100. $\sec^2\theta =$

a) $1 - \cos^2\theta$

b) $1 - \tan^2\theta$

c) $1 + \tan^2\theta$

d) $1 - \cot^2\theta$

e) $1 + \cot^2\theta$

Answer: c

101. $Sin\frac{-3\pi}{2} =$ _____ ?

a) 1

b) 0

c) -1

d) 11

e) None of these

Answer: a

102. $Cos\frac{-3\pi}{2} =$ _____ ?

a) 1

b) 0

c) -1

d) 10

e) None of these

Answer: b

103. $Cos9\pi =$ _____ ?

a) 1

b) 0

c) – 1
d) 10
e) None of these
Answer: c

104. $\text{Cosec}^2\theta - \text{Cot}^2\theta =$ _____ ?

a) 1
b) 0
c) – 1
d) $\text{Tan}^2\theta$
e) $\text{Sec}^2\theta$
Answer: a

105. $\text{Cos}^2 2\theta =$ _____ ?

a) $1 - \sin^2\theta$
b) $1 + \sin^2\theta$
c) $1 - \sin^2 2\theta$
d) $1 - \sin\theta$
e) $1 + \sin\theta$
Answer: c

106. $1 + \cot^2 2\theta =$ _____ ?

a) $\sec^2\theta$
b) $\text{cosec}^2\theta$
c) $\text{cosec}^2 2\theta$
d) $\sec^2\theta$
e) none of these
Answer: c