MATHS

BOOKS - SURA MATHS (TAMIL ENGLISH)

ONE MARK QUESTIONS SET

Multiple Choice Question

1. If the ordered pairs $(a+2, 4)$ and $(5, 2a+b)$ are equal to then (a, b) is

A. $(2, 2)$

B. $(5, 1)$

C. $(2, 3)$

D. $(3, -2)$

Answer: D

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2. Composition of function is commutative ___.

A. Always true

B. Never true

C. Sometimes true

D. Depending upon the function.

Answer: C

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3. In an A.P., the first terms is 1 and the the common difference is 4. How many terms of the A.P. must be taken for their sum to be equal to 120?

A. 6

B. 7

C. 8

D. 9

Answer: C

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4. The 8th term of the G.P. 9, 3, 1, ____.

A. 243

B. 423

C. $\frac{1}{243}$

D. $\frac{1}{423}$

Answer: C

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5. Which of the following should be added to make $x^4 + 64$ a perfect square.

A. $4x^2$

B. $16x^2$

C. $8x^2$

D. $-8x^2$

Answer: B

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6. What is the value of x in $3\sqrt{x} = 9$?

A. 3

B. 6

C. 8

D. 9

Answer: D

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7. A square matrix, all of whose elements except those in the leading diagonal are zero is called a ___ matrix.

A. Square

B. Scalar

C. Diagonal

D. Column

Answer: C

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8. Two poles of heights 6 m and 11 stand vertically on a plane ground. If the distance between their feet is 12 m, what is the distance between

their tops ?

A. 13m

B. 14m

C. 15m

D. 12.5m

Answer: A

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9. If A is a point on the Y-axis whose ordinate is 8 and B is a point on the X-axis whose abscissae is 5 then the equation of the line AB is ___.

A. $8x + 5y = 40$

B. $8x - 5y = 40$

C. $x = 8$

D. $y = 5$

Answer: A

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10. $co60^\circ \sin 30^\circ + \cos 30^\circ \sin 60^\circ$ =___.

A. 1

B. $\frac{1}{\sqrt{2}}$

C. $\frac{1}{2}$

D. $\frac{\sqrt{3}}{2}$

Answer: A

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11. CSA of a hemisphere =____ sq.units.

A. πr^2

B. $2\pi r^2$

C. $3\pi r^2$

D. $4\pi r^2$

Answer: B

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12. The volume (in cm^3) of the greatest sphere that can be cut off from a cylindrical log of wood of base radius 1 cm and height 5 cm is

A. $\frac{4}{3}\pi$

B. $\frac{10}{3}\pi$

C. 5π

D. $\frac{20}{3}\pi$

Answer: A

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13. If the standard deviation of x, y, z is p then the standard deviation of $3x + 5, 3y + 5, 3z + 5$ is ___.

A. $3p + 5$

B. $3p$

C. $p + 5$

D. $9p + 15$

Answer: B

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14. A page is selected at random from a book. The probability that the digit at units place of the page number chosen is less than 7 is

A. $\frac{3}{10}$

B. $\frac{7}{10}$

C. $\frac{3}{9}$

D. $\frac{7}{9}$.

Answer: B

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15. If $f: A \to B$ is a bijective function and if $n(B) = 7$, then n(A) is equal to

A. 7

B. 49

C. 1

D. 14

Answer: A

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16. If $n(A) = p$ and $n(B) = q$ then $n(A \times B)$___.

A. $p + q$

B. pq

C. $\frac{p}{q}$

D. ϕ

Answer: B

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17. $7^{4k} =$_ _ (mod 100)

A. 1

B. 2

C. 3

D. 4

Answer: A

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18. Find the sum of $1 + 3 + 5 + \ldots + 55$

A. 874

B. 487

C. 784

D. 487

Answer: C

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19. $\frac{3y - 3}{y} \div \frac{7y - 7}{3y^2}$ is

A. $\frac{9y}{7}$

B. $\dfrac{9y^3}{21y-21}$

C. $\dfrac{21y^3-42y+21}{3y^3}$

D. $\dfrac{7\left(y^2-2y+1\right)}{y^2}$

Answer: A

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20. $\sqrt{361x^4y^2} =$ _ _

A. $19xy$

B. $19xy^2$

C. $19x^2y^2$

D. $19x^2y$

Answer: D

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21. Transpose of a columns matrix is

A. unit matrix

B. diagonal matrix

C. column matrix

D. row matrix

Answer: D

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22. If

$\triangle ABC, DE \| \| BC, AB = 3.6m, AC = 2.4cm$ and $AD = 2.1cm$

then the length of AE=

A. 1.4m

B. 1.8m

C. 1.2m

D. 1.05m

Answer: A

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23. The point of intersection of $3x - y = 4$ and $x + y = 8$ is

A. $(5, 3)$

B. $(2, 4)$

C. $(3, 5)$

D. $(4, 4)$

Answer: C

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24. If $\sin\theta = \cos\theta$ then $2\tan^2\theta + \sin^2\theta - 1 =$ _ _.

A. $\frac{-3}{2}$

B. $\frac{3}{2}$

C. $\frac{2}{3}$

D. $\frac{-2}{3}$

Answer: B

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25. The angle of depression of the top and bottom of 20m tall building from the top of a multistoried building are 30° and 60° respectively. The height of the multi storied building and the distance between two building (in meters) is ___.

A. $20, 10\sqrt{3}$

B. $30, 5\sqrt{3}$

C. $20, 10$

D. $30, 10\sqrt{3}$

Answer: D

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26. The curved surface area of a right circular cone of height 15 cm and base diameter 16 cm is

A. $60\pi cm^2$

B. $68\pi cm^3$

C. $120\pi cm^2$

D. $136\pi cm^2$

Answer: D

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27. The range of the data 8,8,8,8,8..8 is

A. 0

B. 1

C. 3

D. 8

Answer: A

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28. Probability of sure event is _____.

A. 0

B. 1

C. -1

D. $\frac{1}{2}$

Answer: B

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29. $A = \{a, b, p\}, B = \{2, 3\}, C = \{p, q, r, s\}$ then $n[(A \cup C) \times B]$ is

A. 8

B. 20

C. 12

D. 16

Answer: C

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30. A function $f: R \to R$ defined by $f(x) = ax^2 + bx + c, (a \neq 0)$ is called ___ function.

A. linear

B. quadratic

C. cubic

D. reciprocal

Answer: B

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31. An A.P. consists of 31 terms. If its 16th terms is m, then the sum of all the terms of this A.P. is

A. 31m

B. 62m

C. 31m

D. $\frac{31}{2}$m

Answer: A

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32. If G.P if $t_1 = \frac{1}{5}$ and $t_2 = \frac{1}{25}$ then the common ratio is ___.

A. $\frac{1}{5}$

B. $\frac{1}{15}$

C. $\frac{1}{25}$

D. 5

Answer: A

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33. A system of three linear equations in three variables is inconsistent if their planes.

A. intersect only at a point

B. Intersect in a line

C. coincides with other each

D. do not intersect

Answer: D

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34. $\frac{x-3}{x^2-9} =$ _ _.

A. $x-3$

B. $\frac{1}{x-3}$

C. $x+3$

D. $\frac{1}{x+3}$

Answer: D

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35. If A is a 3×3 matrix and B is 3×4 matrix how many column does AB have ____.

A. 3

B. 4

C. 2

D. 5

Answer: B

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36. If $\triangle LMN, \angle L = 60^\circ, \angle M = 50^\circ$, if $\triangle LMN - \triangle PQR$ then the value of $\angle R$ is ___.

A. 40°

B. 70°

C. 30°

D. 110°

Answer: B

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37. The area of triangle formed by the points $(-5, 0), (0, -5)$ and $(5, 0)$ is

A. 0 sq.units

B. 25 sq.units

C. 5 sq.units

D. None of these

Answer: B

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38. The inclination of x-axis and everyline parallel to X-axis is ___.

A. 0°

B. 45°

C. 60°

D. 90°

Answer: A

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39. If $(\sin \propto + \cos ec \propto)^2 + (\cos \propto + \sec \propto)^3 = k + \tan^2 \propto + \cot^2 \propto$, then the value of k=___.

A. 9

B. 7

C. 5

D. 3

Answer: B

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40. A shuttle cock used for playing badminton has the shape of the combination of

A. a cylinder and a sphere

B. a hemisphere and a cone

C. a sphere and a cone

D. frustum of a cone and a hemisphere

Answer: D

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41. If the variance is 0.49 then the standard deviation is ___.

A. 0.7

B. 7

C. 0.49

D. 0.07

Answer: A

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42. If a letter is chosen at random from the English alphabets {a, b,.., z}, then the probability that the tletter chosen precedes x

A. $\frac{12}{13}$

B. $\frac{1}{13}$

C. $\frac{23}{26}$

D. $\frac{2}{26}$

Answer: C

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43. If $\{(a, 8), (6, b)\}$ represents an identity functions then the values of a and b are respectively

A. $(8, 6)$

B. $(8, 8)$

C. $(6, 8)$

D. $(6, 6)$

Answer: A

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44. If $n(A \times B) = 20$ and $n(A) = 5$ then $n(B) =$

A. 10

B. 5

C. 4

D. 100

Answer: C

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45. The next term of the sequences $\frac{3}{16}, \frac{1}{8}, \frac{1}{12}, \frac{1}{18}, \ldots$

A. $\frac{1}{24}$

B. $\frac{1}{27}$

C. $\frac{2}{3}$

D. $\frac{1}{81}$

Answer: B

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46. In a G.P.$t_2 = \frac{3}{5}$ and $t_3 = \frac{1}{5}$. The the common ratio is ____.

A. $\frac{1}{5}$

B. $\frac{1}{3}$

C. 1

D. 5

Answer: B

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47. $\frac{x}{x^2-25} - \frac{8}{x^2+6x+5}$ gives

A. $\frac{x^2-7x+40}{(x-5)(x+5)}$

B. $\frac{x^2+7x+40}{(x-5)(x+5)(x+1)}$

C. $\frac{x^2-7x+40}{(x^2-25)(x+1)}$

D. $\frac{x^2+10}{(x^2+25)(x+1)}$

Answer: C

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48. The LCM of $8x^4y^2$, $48x^2y^4$ is _____.

A. $48x^4y^4$

B. $48x^4y^2$

C. $48x^2y^4$

D. $48x^4y^2$

Answer: A

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49. Which of the following can be caluculated from the given matrices

$$A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix}, B = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$$

(i)A^2 (ii)B^2

(iii)AB (iv)BA

A. (i) and (ii) only

B. (ii) and (iii) only

C. (ii) and (iv) only

D. all of these

Answer: C

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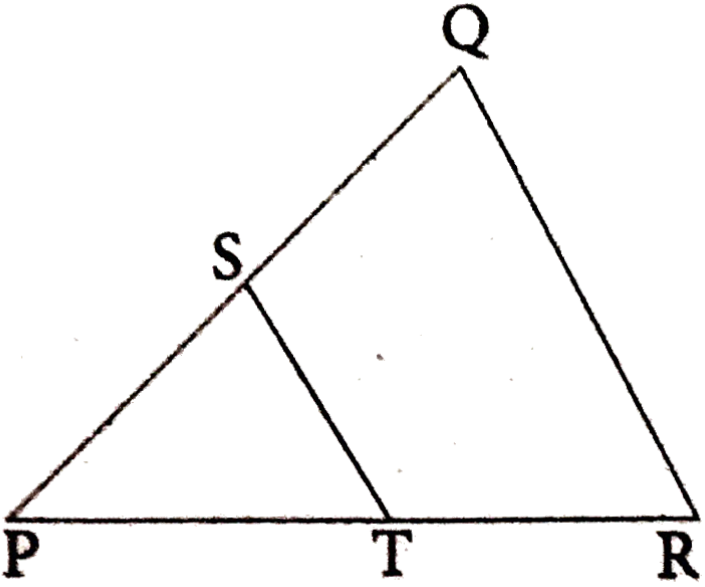
50. In a given figure, ST||QR, PS=2 cm and QS=3 cm. Then the ratio of the area of $\triangle PQR$ to the area of $\triangle PST$ is ___.



A. $25:4$

B. $25:7$

C. $25:11$

D. $25:13$

Answer: A

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51. The straight line given by the equation $x = 11$ is

A. parallel to x-axis

B. passing through the origin

C. parallel to y-axis

D. passing through the point (0, 11)

Answer: C

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52. The equation of a straight line passing through $(5, 7)$ and is parallel to y-axis is ___.

A. $x = 5$

B. $x = 7$

C. $y = 5$

D. $y = 7$

Answer: A

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53. A tower is 60 m height. Its show is x metres shorter when the sun's altitude is 45° than when it has been 30°, then x is equal to

A. 41.92 m

B. 43.92 m

C. 43 m

D. 45.2 m

Answer: B

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54. The total surface area of a hemi-sphere is how much times the square of its radius.

A. π

B. 2π

C. 3π

D. 4π

Answer: C

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55. If the mean and coefficient of variation of a data are 4 and 87.5 % then the standard deviation is

A. 3.5

B. 3

C. 4.5

D. 2.5

Answer: A

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56. The probability a red marble selected at random from a jar containing p red, q blue and r green marbles is

A. $\frac{q}{p+q+r}$

B. $\frac{p}{p+q+r}$

C. $\frac{p+q}{p+q+r}$

D. $\frac{p+r}{p+q+r}$

Answer: B

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57. If $n(A \times B) = 6$ and $A = \{1, 3\}$, then $n(B)$ is

A. 1

B. 2

C. 3

D. 6

Answer: C

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58. If $f: A \to B$ is a bijective function and if $n(A) = 5$, then n(B) is equal to ____.

A. 10

B. 4

C. 5

D. 25

Answer: C

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59. Euclid's division lemma states that for positive integers a and b, there exist unique integers q and r such that $a = bq + r$, where r must satisfy.

A. $1 < r < b$

B. $0 < r < b$

C. $0 \leq r < b$

D. $0 < r \leq b$

Answer: C

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60. The value of $\left(1^3 + 2^3 + 3^3 + \ldots + 15^3\right) - (1 + 2 + 3 + \ldots + 15)$ is

A. 14400

B. 14200

C. 14280

D. 14520

Answer: C

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61. The solution of the system $x + y - 3z = -6, -7y + 7z = 7, 3z = 9$ is

A. $x = 1, y = 2, z = 3$

B. $x = -1, y = 2, z = 3$

C. $x = -1, y = -2, z = 3$

D. $x = 1, y = -2, z = -3$

Answer: A

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62. Graph of a linear polynomial is a

A. straight

B. circle

C. parabola

D. None of these

Answer: A

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63. If the order of A is 4×3 and order of B is 3×2 then the order of the product AB=____.

A. 4×2

B. 4×3

C. 3×2

D. 3×3

Answer: A

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64. The two tangents from an external points P to a circle with centre at O are PA and PB. If $\angle APB = 70^\circ$ then the value of $\angle AOB$ is

A. 100°

B. 110°

C. 120°

D. 130^2

Answer: B

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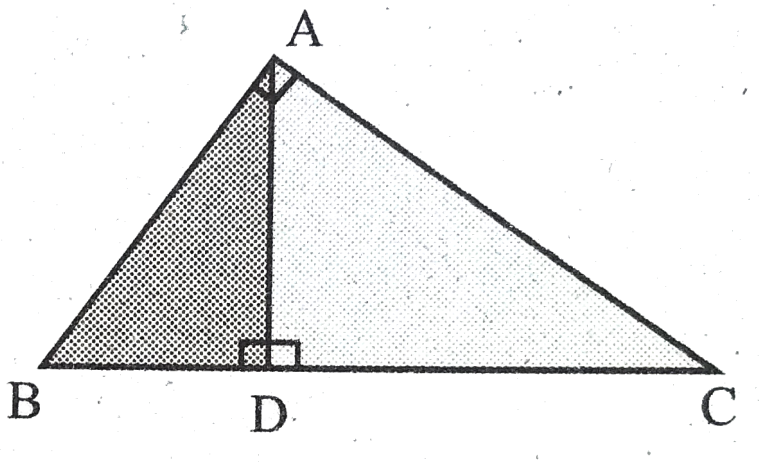
65. In the adjacent figure $\angle BAC = 90^\circ$ and $AD \perp BC$ then



A. $DB \cdot CD = BC^2$

B. $AB \cdot AC = BC^2$

C. $BD \cdot CD = AD^2$

D. $AB \cdot AC = AC^2$

Answer: C

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66. The slope of the line which is perpendicular to a line joining the points $(0, 0)$ and $(-8, 8)$ is

A. -1

B. 1

C. $\frac{1}{3}$

D. -8

Answer: B

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67. $a\cot\theta + b\cos ec\theta = p$ and $b\cot\theta + a\cos ec\theta = q$ then $p^2 - q^2$ is equal to

A. $a^2 - b^2$

B. $b^2 - a^2$

C. $a^2 + b^2$

D. $b - a$

Answer: B

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68. The height and radius of the cone of which the frustum is a part are h^1 units and r_1 units respectively. Height of the frustum is h_2 units and radius of the smaller base is r_2 units. If $h_2 : h_1 = 1:2$ then $r_2 : r_1$ is

A. $1:3$

B. $1:2$

C. $2:1$

D. $3:1$

Answer: B

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69. The mean of 100 observations is 40 and their standard deviation is 3. The sum of square of all observation is ___.

A. 40000

B. 160900

C. 160000

D. 30000

Answer: B

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70. Kamalam went to play a lucky draw contest. 135 tickets of the lucky draw were sold. If the probability of Kamalam winning is $\frac{1}{9}$, then the number of tickets bought by Kamalam is

A. 5

B. 10

C. 15

D. 20

Answer: C

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71. If there are 1024 relations from a set $A = \{1, 2, 3, 4, 5\}$ to a set B, then the number of elements in B is

A. 3

B. 2

C. 4

D. 8

Answer: B

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72. a plane is flying at a speed of 500 km per hour. Express the distance d travelled by the plane as function of time t in hours.

A. $500t$

B. $500d$

C. $500dt$

D. 500

Answer: A

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73. Using Euclid's division lemma, if the cube of any positive integers is divided by 9 then the possible remainders are ___.

A. $0, 1, 8$

B. $1, 4, 8$

C. $0, 1, 3$

D. $1, 3, 5$

Answer: A

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74. If G.P if $t_1 = \frac{1}{5}$ and $t_2 = \frac{1}{25}$ then the common ratio is ___.

A. $\frac{1}{25}$

B. $\frac{1}{5}$

C. $\frac{1}{125}$

D. $\frac{1}{30}$

Answer: B

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75. The solution of $(2x-1)^2=9$ is equal to

A. -1

B. 2

C. $-1, 2$

D. None of these

Answer: C

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76. The value of $\sqrt{(1-x)^2(2-x)^2(3-x)^2}$ when x=4 is ___.

A. 3

B. -3

C. 6

D. -6

Answer: C

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77. If the order of matrix A is 3×4 and the order of B is 4×3 then the order of BA is ___.

A. 3×3

B. 4×4

C. 4×3

D. Not defined

Answer: B

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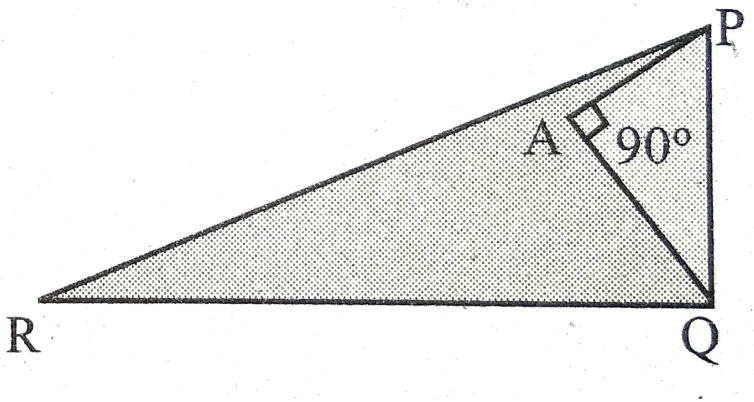
78. In the given figure, PR= 26 cm, QR=24 cm, $PAQ = 90^\circ$, $PA = 6cm$ and QA=8 cm. Find $\angle PQR$



A. 80°

B. 85°

C. 75°

D. 90°

Answer: D

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79. A straight line has equation $8y = 4x + 21$. Which of the following is true

A. The slope is 0.5 and the y intercept is 2.6

B. The slope is 5 and the y intercept is 1.6

C. The slope is 0.5 and the y intercept is 1.6

D. The slope is 5 and the y intercept is 2.6.

Answer: D

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80. The value of $\sin^2\theta + \frac{1}{1+\tan^2\theta}$ is equal to

A. $\tan^2\theta$

B. 1

C. $\cot^2\theta$

D. 0

Answer: B

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81. The angle of elevation of a cloud from a point h metres above a lake is β. The angle of depression of its reflection in the lake is 45°. The height of location of the cloud from the lake is

A. $\frac{h(1+\tan\beta)}{1-\tan\beta}$

B. $\frac{h(1-\tan\beta)}{1+\tan\beta}$

C. $h\tan(45^\circ-\beta)$

D. None of these

Answer: A

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82. If the radius of the base of a right circular cylinder is halved keeping the same height, then the ratio of the volume of the cylinder thus obtained to the volume of original cylinder is

A. $1:2$

B. $1:4$

C. $1:6$

D. $1:8$

Answer: B

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83. Variance of first 20 natural numbers is

A. 32.25

B. 44.25

C. 33.25

D. 30

Answer: C

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84. The probability of an impossible event is ____.

A. 0

B. 1

C. 2

D. -1

Answer: A

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85. If the ordered pairs $(a+2, 4)$ and $(5, 2a+b)$ are equal to then (a, b) is

A. $(2, -2)$

B. $(5, 1)$

C. $(2, 3)$

D. $(3, -2)$

Answer: D

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86. $f(x) = (x+1)^3 - (x-1)^3$ represents a functions which is

A. linear

B. cubic

C. reciprocal

D. quadratic

Answer: D

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87. If $A = 2^{65}$ and $B = 2^{64} + 2^{63} + 2^{62} + \ldots + 2^{0}$ which of the following is true?

A. B is 264 more than A

B. A and B are equal

C. B is larger than A by 1

D. A is larger than B by 1

Answer: D

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88. If $3, x, 6.75$ are in G.P. then x is ___.

A. 3.5

B. 3.75

C. 4.5

D. 4.75

Answer: C

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89. The number of points of intersection of the quadratic polynomial $x^2 + 4x + 4$ with the X axis.

A. 0

B. 1

C. $0 \text{ or } 1$

D. 2

Answer: B

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90. The square root of $\frac{256x^8y^4z^{10}}{25x^6y^6z^6}$ is equal to

A. $\frac{16}{5}\left|\frac{x^2x^4}{y^2}\right|$

B. $\frac{16}{5}\left|\frac{y^2}{x^2z^4}\right|$

C. $\frac{16}{5}\left|\frac{y}{xz^2}\right|$

D. $\frac{16}{5}\left|\frac{xz^2}{y}\right|$

Answer: D

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91. If $A=\begin{bmatrix}1&2&3\\3&2&1\end{bmatrix}, B=\begin{bmatrix}1&2&3\\3&2&1\end{bmatrix}$ and $C=\begin{bmatrix}0&1\\-2&5\end{bmatrix}$ which of the following statements are correct?

(i) $AB+C=\begin{bmatrix}5&5\\5&5\end{bmatrix}$ (ii) $BC=\begin{bmatrix}0&1\\2&-3\\-4&10\end{bmatrix}$

(iii) $BA+C=\begin{bmatrix}2&5\\3&0\end{bmatrix}$ (iv) $(AB)C=\begin{bmatrix}-8&20\\-8&13\end{bmatrix}$

A. (i) and (ii) only

B. (ii) and (iii) only

C. (iii) and (iv) only

D. all of these

Answer: A

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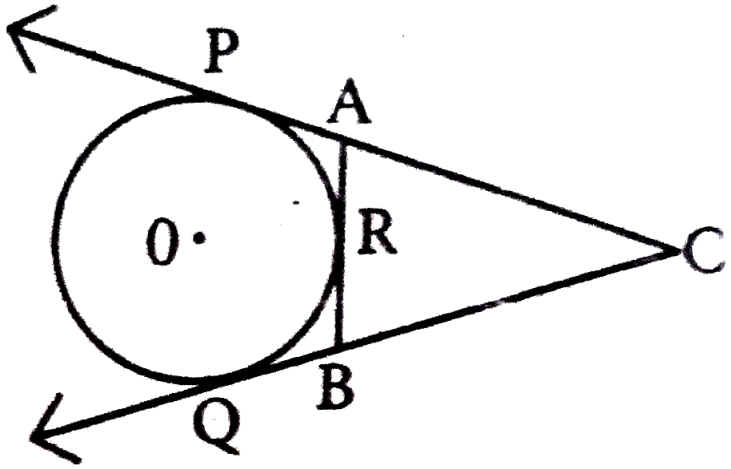
92. In figure CP and CQ are tangents to a circle with centre at 0. ARB is another tangent touching the circle at R. If $CP = 11cm$ and $BC = 7cm$, then the length of BR is ___.



A. 6cm

B. 5cm

C. 8cm

D. 4cm

Answer: D

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93. When proving that a quadrilateral is a parallelogram by using slopes you must find

A. The slopes of two sides

B. The lengths of all sides

C. The slopes of two pair of opposite sides

D. Both the length and slopes of two sides

Answer: B

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94. $1 - \tan^2 45^\circ =$ _ _ .

A. 0

B. 1

C. -1

D. $\sqrt{3}$

Answer: A

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95. The height of a right circular cone whose radius is 5 cm and slant height is 13 cm will be

A. 12cm

B. 10cm

C. 13 cm

D. 5cm

Answer: A

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96. The ratio of following area of a sphere and CSA of hemisphere is ___.

A. $1:2$

B. $1:3$

C. $2:1$

D. $2:3$

Answer: C

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97. Which of the following is not a measure of dispersion ?

A. Range

B. Standard deviation Arithemetic mean

C. Arithmetic mean

D. Variance

Answer: C

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98. What will be the probability that a non-leap year will have 53 saturdays?

A. $\frac{1}{7}$

B. $\frac{2}{7}$

C. $\frac{3}{7}$

D. $\frac{5}{7}$

Answer: A

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99. If $A - \{1, 2\}, B = \{1, 2, 3, 4\}, C = \{5, 6\}$ and D={5, 6, 7, 8}` then state which of the following statement is true.

A. $(A \times C) \subset (B \times D)$

B. $(B \times D) \subset (A \times C)$

C. $(A \times B) \subset (A \times D)$

D. $(D \times A) \subset (B \times A)$

Answer: A

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100. Composition of function is associative.

A. Always true

B. Never true

C. Sometimes true

D. Depending upon the function.

Answer: A

Watch Video Solution

101. If the H.C.F. of 65 and 117 is expressible in the form of $65m - 117$, then the value of m is

A. 4

B. 2

C. 1

D. 3

Answer: B

Watch Video Solution

102. Find the sum of the following series

$1 + 3 + 5 + \ldots + 71$

A. 2196

B. 9126

C. 1296

D. 7196

Answer: C

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103. If the roots of the equation $q^2x^2 + p^2x + r^2 = 0$ are the squares of the roots of the equation $qx^2 + px + r = 0$ then q, p, r are in ___.

A. A.P.

B. G.P.

C. Both A.P. and G.P.

D. None of these

Answer: B

View Text Solution

104. Who is the "father of algebra"?

A. Leibniz

B. Euclid

C. Al-khwarizmi

D. Pythagoras

Answer: C

Watch Video Solution

105. Find the matrix X if $2X + \begin{bmatrix} 1 & 3 \\ 5 & 7 \end{bmatrix} = \begin{bmatrix} 5 & 7 \\ 9 & 5 \end{bmatrix}$

A. $\begin{bmatrix} -2 & -2 \\ 2 & -1 \end{bmatrix}$

B. $\begin{bmatrix} 2 & 2 \\ 2 & -1 \end{bmatrix}$

C. $\begin{bmatrix} 1 & 2 \\ 2 & 2 \end{bmatrix}$

D. $\begin{bmatrix} 2 & 1 \\ 2 & 2 \end{bmatrix}$

Answer: B

Watch Video Solution

106. A tangent is perpendicular to the radius at the

A. centre

B. Point of contact

C. infinity

D. chord

Answer: B

Watch Video Solution

107. A man walks near a wall, such that the distance between him and the wall is 10 units. Consider the wall to be the Y axix. The path travelled by the man is

A. $x = 10$

B. $y = 10$

C. $x = 0$

D. $y = 0$

Answer: A

Watch Video Solution

108. The angle inclination of a line parallel to Y-axis is ___.

A. 0°

B. 30°

C. 60°

D. 90°

Answer: D

Watch Video Solution

109. Two persons are standing 'x' metres apart from each other and the height of the first person is double that of the other. If from the middle points of the linejoining their their feet an observe finds the angular elevations of their tops to be complementary, then the height of the shorter person (in metres) is

A. $\sqrt{2}$

B. $\frac{x}{2\sqrt{2}}$

C. $\frac{x}{\sqrt{2}}$

D. $2x$

Answer: B

Watch Video Solution

110. A frustum of a right circular cone is of height 16 cm with radii of its ends as 8 cm and 20 cm. Then, the voume of the frustum is

A. $3328\pi cm^3$

B. $3228\pi cm^3$

C. $3240\pi cm^3$

D. $3340\pi cm^3$

Answer: A

Watch Video Solution

111. If the sm of 10 data values is 265 then their mean is ____.

A. 275

B. 26.5

C. 255

D. 2650

Answer: B

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112. A purse contains 10 notes of Rs. 2000, 15 notes of Rs. 500, and 25 notes of Rs. 200. One note is drawn at random. What is the probability that the note is either a Rs. 500 note or Rs. 200 note ?

A. $\frac{1}{5}$

B. $\frac{3}{10}$

C. $\frac{2}{3}$

D. $\frac{4}{5}$

Answer: D

Watch Video Solution

113. A relation which contains no element is called a ___.

A. equal relation

B. null relation

C. unequal relation

D. Cartesian product

Answer: B

Watch Video Solution

114. Let f and g be two functions given by

$f = \{(0, 1), (2, 0), (3, -4), (4, 2), (5, 7)\}$

$g(x) = \{(0, 2), (1, 0), (2, 4), (-4, 2), (7, 0)$ then the range of fog is ___.

A. $\{0, 2, 3, 4, 5\}$

B. $\{-4, 1, 0, 2, 7\}$

C. $\{1, 2, 3, 4, 5\}$

D. $\{0, 1, 2\}$

Answer: D

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115. Given $F_1 = 1, F_2 = 3$ and $F_n = F_{n-1} + F_{n-2}$ then F_3 is ____.

A. 3

B. 5

C. 8

D. 11

Answer: D

Watch Video Solution

116. Who is the " Father of Geometry"?

A. Euclid

B. Thales

C. Pythagoras

D. Al-khwarizmi

Answer: A

Watch Video Solution

117. Find the LCM of the given expressions.

$4x^2y, 8x^3y^2$

A. $32x^2y^2$

B. $12x^3y^2$

C. $8x^3y^2$

D. $8x^2y^3$

Answer: C

Watch Video Solution

118. The values of a and b if $4x^4 - 24x^3 + 76x^2 + ax + b$ is a perfect square are

A. $100, 120$

B. $-120, 100$

C. $10, 12$

D. $12, 10$

Answer: B

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119. If number of columns and rows are not equal in a matrix then it is said to be a

A. diagonal matrix

B. rectangular matrix

C. square matrix

D. identity matrix

Answer: B

Watch Video Solution

120. If in triangles ABC and EDF, $\frac{AB}{DE} = \frac{BC}{FD}$ then they will be similar, when

A. $\angle B = \angle E$

B. $\angle A = \angle D$

C. $\angle B = \angle D$

D. $\angle A = \angle E$

Answer: C

Watch Video Solution

121. Consider four straight lines

(i)$l_1 = 3y = 4x + 5$ (ii)$l_2 : 4y = 3x - 1$

(iii)$l_3 : 4y + 3y = 7$ (iv)$l_4 4x + 3y = 2$

A. l_1 and l_2 are perpendicular

B. l_1 and l_4 are parallel

C. l_2 and l_4 are perpendicular

D. l_2 and l_4 are parallel

Answer: C

Watch Video Solution

122. $(2, 1)$ is the points of intersection of two lines

A. $x - y - 3 = 0, 3x - y - 7 = 0$

B. $x + y = 3, 3x + y = 7$

C. $3x + y = 3, x + y = 7$

D. $x + 3y - 3 = 0, x - y - 7 = 0$

Answer: B

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123. If $x = a\tan\theta$ and $y = b\sec\theta$ then

A. $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$

B. $\frac{y^2}{b^2} - \frac{x^2}{a^2} = 1$

C. $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$

D. $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$

Answer: B

Watch Video Solution

124. In a hollow cylinder, the sum of the external and internal radii is 14 cm and the width is 4 cm. If its height is 20 cm, the volume of the material in it is

A. $5600\pi cm^3$

B. $1120\pi cm^3$

C. $56\pi cm^3$

D. $3600\pi cm^3$

Answer: B

Watch Video Solution

125. The sum of all deviations of the data from its mean is

A. always positive

B. always negative

C. zero

D. non-zero integer

Answer: C

Watch Video Solution

126. Which of the following is incorrect ?

A. $P(A) > 1$

B. $0 \leq P(A) \leq 1$

C. $P(\Phi) = 0$

D. $P(A) + P(A) = 1$

Answer: A

Watch Video Solution

127. The range of the relation $r = \{(x, x^2) \mid x$ is a prime number less than 13$\}$ is

A. $\{2, 3, 5, 7\}$

B. $\{2, 3, 5, 7, 11\}$

C. $\{4, 9, 45, 49, 121\}$

D. $\{1, 4, 9, 25, 49, 121\}$

Answer: C

Watch Video Solution

128. Let $A = \{1, 2, 3, 4\}$ and $B = \{4, 8, 9, 10\}$. A function $f: A \to B$ given by $f = \{(1, 4), (2, 8), (3, 9), (4, 10)\}$ is a

A. Many-one function

B. Identity function

C. One-to-one function

D. into function

Answer: C

Watch Video Solution

129. If 6 times of 6th term of an A.P. is equal to 7 times term, then the 13th term of the A.P. is

A. 0

B. 6

C. 7

D. 13

Answer: A

Watch Video Solution

130. Find the sum of $1 + 3 + 5 + \ldots +$ to 40 terms

A. 1600

B. 1060

C. 1640

D. 1460

Answer: A

Watch Video Solution

131. If (x-6) is the HCF of $x^2 - 2x - 24$ and $x^2 - kx - 6$ then the value of k is.

A. 3

B. 5

C. 6

D. 8

Answer: B

Watch Video Solution

132. The square root of $361x^4y^2$ is ___.

A. $17x^4y^2$

B. $29x^2y$

C. $19x^2y$

D. $19x^4y^2$

Answer: C

Watch Video Solution

133. For the given matrix $A = \begin{bmatrix} 1 & 3 & 5 & 7 \\ 2 & 4 & 6 & 8 \\ 9 & 11 & 13 & 15 \end{bmatrix}$ the order of the matrix A^T is

A. 2×3

B. 3×2

C. 3×4

D. 4×3

Answer: D

Watch Video Solution

134. If ΔABC is an isosceles triangle with $\angle C = 90^\circ$ and AC=5 cm, then AB is

A. 2.5 cm

B. 5cm

C. 10 cm

D. $5\sqrt{2}$

Answer: D

Watch Video Solution

135. If the slope of the line PQ is $\frac{1}{\sqrt{3}}$ then slope of the perpendicular bisector of PQ is

A. $\sqrt{3}$

B. $-\sqrt{3}$

C. $\frac{1}{\sqrt{3}}$

D. 0

Answer: B

Watch Video Solution

136. If $\sin\theta + \cos\theta = a$ and $\sec\theta + \cos ec\theta = b$, then the value of $b\left(a^2 - 1\right)$ is equal to

A. $2a$

B. $3a$

C. 0

D. $2ab$

Answer: A

Watch Video Solution

137. The total surface area of a cylinder whose radius is $\frac{1}{3}$ of its height is

A. $\frac{9\pi h^2}{8}$ sq.units

B. $24\pi h^2$ sq.units

C. $\frac{8\pi h^2}{9}$ sq.units

D. $\frac{56\pi h^2}{9}$ sq.units

Answer: C

Watch Video Solution

138. The ratio of the volumes of a cylinder, a cone and a sphere, if each has the same diameter and same height is

A. $1:2:3$

B. $2:1:3$

C. $1:3:2$

D. $3:1:2$

Answer: D

Watch Video Solution

139. If the sum and mean of a data are 407 and 11 respectively, then the number of observations in the height is ___.

A. 47

B. 37

C. 57

D. 41

Answer: B

Watch Video Solution

140. If $P(A \cap B) = 0.3$, $P\left(\overline{A} \cap B\right) = 0.45$ then $P(B) =$ ____.

A. 0.75

B. 0.15

C. 0.48

D. 0.42

Answer: A

Watch Video Solution

141. Let $n(A) = m$ and $n(B) = n$ that the total number of non-empty relations that can be defined from A to B is

A. m^n

B. n^m

C. $2^{mn} - 1$

D. 2^{mn}

Answer: C

Watch Video Solution

142. Which one of the following is not true statements?

A. Relation is the subset of function

B. Function is the subset of relation

C. Relation is the subset of cartesian product

D. Function is the subset of cartesian product

Answer: A

Watch Video Solution

143. The least number that is divisible by all the numbers from 1 to 10 (both inclusive) is

A. 2025

B. 5220

C. 5025

D. 2520

Answer: D

Watch Video Solution

144. The number of terms in the A.P. 3, 6, 9,12, ...111 is _____.

A. 108

B. 55

C. 111

D. 37

Answer: D

Watch Video Solution

145. A linear equation in three variables of the form $ax + by + cz + d = 0$ represents a ___.

A. straight line

B. plane

C. circle

D. parabola

Answer: B

Watch Video Solution

146. Graph of a linear polynomial is a

A. straight line

B. circle

C. parabola

D. hyperbola

Answer: A

Watch Video Solution

147. $\begin{bmatrix} 1 & 7 & -3 \\ 0 & 2 & 4 \\ 0 & 0 & 7 \end{bmatrix}$ is a ___ matrix.

A. scalar

B. upper triangular

C. Diagonal

D. lower triangular

Answer: B

Watch Video Solution

148. In figure if PR is tangent to the circle at P and O is the centre of the circle, then $\angle POQ$ is ____.

A. 120°

B. 100°

C. 110°

D. 90°

Answer: D

Watch Video Solution

149. If $(5, 7), (3, p)$ and $(6, 6)$ are collinear, then the value of p is

A. 3

B. 6

C. 9

D. 12

Answer: C

Watch Video Solution

150. When proving that quadrilateral is a trapezium it is neccesary to show ____.

A. two sides are parallel

B. opposite sides are parallel

C. two parallel an two non-parallel sides

D. all sides are of equal length

Answer: C

Watch Video Solution

151. $\tan\theta \cos ec^2\theta - \tan\theta$ is equal to

A. $\sec\theta$

B. $\cot^2\theta$

C. $\sin\theta$

D. $\cot\theta$

Answer: D

Watch Video Solution

152. If two solid hemispheres of same base radius r units are joined together along their bases, then curved surface area of this new solid is

A. $4\pi r^2$ sq. units

B. $6\pi^2$ sq.units

C. $3\pi r^2$ sq.units

D. $8\pi r^2$ sq.units

Answer: A

Watch Video Solution

153. If the radius of the base of a cone is tripled and the height is doubled then the volume is

A. made 6 times

B. made 18 times

C. made 12 times

D. unchanged

Answer: B

Watch Video Solution

154. The probability of getting a job for a person is $\frac{x}{3}$. If the probability of not getting the job is $\frac{2}{3}$ then the value of x is

A. 2

B. 1

C. 3

D. 1.5

Answer: B

Watch Video Solution

155. If $f(x) = 2x^2$ and $g(x) = \frac{1}{3x}$. Then fog is

A. $\frac{3}{2x^2}$

B. $\frac{2}{3x^3}$

C. $\frac{2}{9x^2}$

D. $\frac{1}{x^2}$

Answer: C

Watch Video Solution

156. If a function $f: A \to B$ is both one-one and onto then f is called a____.

A. into function

B. many one function

C. bijection

D. onto function

Answer: C

Watch Video Solution

157. The first term of an arithmetic progressions is unity and the common difference is 4. Which of the following will be a term of this A.P.

A. 4551

B. 10091

C. 7881

D. 12531

Answer: C

Watch Video Solution

158. If $59 \equiv 3 \pmod 7$ then find $368 \equiv \_ \pmod 7$.

A. 4

B. 5

C. 6

D. 7

Answer: A

Watch Video Solution

159. $y^2 + \frac{1}{y^2}$ is not equal to

A. $\frac{y^4+1}{y^2}$

B. $\left(y+\frac{1}{y}\right)^2$

C. $\left(y-\frac{1}{y}\right)^2+2$

D. $\left(y+\frac{1}{y}\right)^2-2$

Answer: B

Watch Video Solution

160. If $\alpha+\beta=-7$ and $\alpha\beta=10$ then find the value of $\alpha-\beta=$_ .

A. 3

B. -3

C. -17

D. 17

Answer: A

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161. Which one of the following is true for any two square matrices A and B of same order?

A. $(AB)^T = A^T B^T$

B. $\left(A^T B\right)^T = A^T B^T$

C. $(AB)^T = BA$

D. $(AB)^T = B^T A^T$

Answer: D

Watch Video Solution

162. The perimeters of two similar triangles $\triangle ABC$ and $\triangle PQR$ are 36 cm and 24 cm respectively. If PQ=10 cm, then the length of AB is ____.

A. $6\frac{2}{3}$ cm

B. $10\frac{\sqrt{6}}{3}$ cm

C. $66\frac{2}{3}$ cm

D. 15 cm

Answer: D

Watch Video Solution

163. The slope of the line joining $(12, 3), (4, a)$ is $\frac{1}{8}$. The value of 'a' is

A. 1

B. 4

C. -5

D. 2

Answer: D

Watch Video Solution

164. If $\sin\theta = \cos\theta$, then the value of 'θ' is ___.

A. 0°

B. 30°

C. 45°

D. 60°

Answer: C

Watch Video Solution

165. The electric pole subtends an angle of 30° at a point on the same level as its foot. At a second point 'b' metres above the first, the depression of the foot of the tower is 60°. The height of the tower (in towers) is equal to

A. $\sqrt{3}b$

B. $\frac{b}{3}$

C. $\frac{b}{2}$

D. $\frac{b}{\sqrt{3}}$

Answer: B

Watch Video Solution

166. A spherical ball of radius r_1 units is melted to make 8 new identical balls each of radius r_2 units. Then $r_1 : r_2$ is

A. $2:1$

B. $1:2$

C. $4:1$

D. $1:4$

Answer: A

Watch Video Solution

167. A solid sphere of radius x cm is melted and cast into a shape of a solid cone of same radius. The height of the cone is

A. 3x cm

B. x cm

C. 4x cm

D. 2x cm

Answer: C

Watch Video Solution

168. The standard deviation of a data is 3 . If each value is multiplled by 5 then the new variance is

A. 3

B. 15

C. 5

D. 22.5

Answer: D

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169. Let $f(x) = \sqrt{1 + x^2}$ then

A. $f(xy) = f(x) \cdot f(y)$

B. $f(xy) \geq f(x) \cdot f(y)$

C. $f(xy) \leq f(x) f(y)$

D. None of these

Answer: C

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170. If $f: A \to B$ is a bijective function and if $n(A) = 5$, then n(B) is equal to ____.

A. 10

B. 4

C. 5

D. 25

Answer: C

Watch Video Solution

171. The sum of the exponents of the prime factors in the prime factorization of 1729 is

A. 1

B. 2

C. 3

D. 4

Answer: C

Watch Video Solution

172. If $1^3 + 2^3 + 3^3 + \ldots + n^3 = 36100$ then find $1 + 2 + 3 + \ldots + n =$ _ _.

A. 170

B. 190

C. $\sqrt{190}$

D. $(36100)^2$

Answer: B

Watch Video Solution

173. Find the excluded values, if any of the following expressions

$$\frac{t}{t^2 - 5t + 6}$$

A. $-5, 6$

B. $5, \ -6$

C. $2, \ -3$

D. $2, 3$

Answer: D

Watch Video Solution

174. $\frac{14x^4}{y} \div \frac{7x}{3y^4} =$ _ _ .

A. $\frac{98x^5}{3y^5}$

B. $\frac{2x^3}{3y^3}$

C. $6x^3y^3$

D. $\frac{1}{6x^3y^3}$

Answer: C

Watch Video Solution

175. If $A = \begin{bmatrix} 2 & 1 & 3 & 4 \\ 5 & 9 & -4 & \sqrt{7} \\ 3 & \frac{5}{2} & 8 & 9 \\ 7 & 0 & 1 & 4 \end{bmatrix}$ then find the element of $a_{43} =$ _ _.

A. 1

B. 9

C. 0

D. 8

Answer: A

Watch Video Solution

176. In a ΔABC, Adis the bisector of $\angle BAC$. If AB=8 cm, BD=6 cm and DC=3 cm. The length of the side AC is

A. 6 cm

B. 4 cm

C. 3 cm

D. 8 cm

Answer: B

Watch Video Solution

177. The equatin of a line passing through the origin and perpendicular to the line $7x - 3y + 4 = 0$ is

A. $7x - 3y + 4 = 0$

B. $3x - 7y + 4 = 0$

C. $3x + 7y = 0$

D. $7x - 3y = 0$

Answer: C

Watch Video Solution

178. If $5x = \sec\theta$ and $\frac{5}{x} = \tan\theta$, then $x^2 - \frac{1}{x^2}$ is equal to

A. 25

B. $\frac{1}{25}$

C. 5

D. 1

Answer: B

Watch Video Solution

179. $\frac{1}{\sin^2\theta} - \frac{\cos^2\theta}{\sin^2\theta}$=___.

A. 1

B. $\tan^2\theta$

C. $1-\tan^2\theta$

D. $1-\sin^2\theta$

Answer: A

Watch Video Solution

180. The difference between the C.S.A and TSA of a right circular cylinder is ___.

A. πr^2

B. $2\pi r^2$

C. $3\pi r^2$

D. $4\pi r^4$

Answer: B

Watch Video Solution

181. The range of first 10 prime numbers is ____.

A. 2.7

B. 2.9

C. 27

D. 29

Answer: C

Watch Video Solution

182. If $P(A) = 0.34, P(B) = 0.46$ and A and $Bare\mu tuallyexclusiveeventsthen$ P(AcupB)=`____.

A. 0.70

B. 0.80

C. 8.0

D. 0.20

Answer: B

Watch Video Solution

183. If $A \times B = \{(3, 2), (3, 4), (5, 2), (5, 4)\}$ then A is ____.

A. $\{3, 5\}$

B. $\{2, 4\}$

C. $\{2, 3, 4, 5\}$

D. $\{3, 2, 1, 6\}$

Answer: A

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184. Let f be function $f: N \to N$ be defined by $f(x) = 3x + 2, \xi nN$. The pre-image of 29 of _____.

A. 87

B. 89

C. 9

D. $\frac{31}{3}$

Answer: C

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185. If the sequence $t_1, t_2, t_3, \ldots$ are in A.P. then the sequence $t_6, t_{12}, t_{18}, \ldots$ is

A. a geometric progression

B. an arthmetic progession

C. neither an A.P. nor G.P.

D. a constant sequence

Answer: B

Watch Video Solution

186. The HCF if 340 and 412 is ___.

A. 4

B. 3

C. 12

D. 6

Answer: A

Watch Video Solution

187. If the product of two monomials is $72x^5$ and their G.C.D is $6x^2$ then their LCM is ___.

A. $72x^3$

B. $6x^2$

C. $432x^7$

D. $12x^3$

Answer: D

Watch Video Solution

188. If the difference between the roots of the equation $x^2 - 13x + k = 0$ is 7 then the value of k is ___.

A. 15

B. 30

C. -30

D. -13

Answer: B

Watch Video Solution

189. Find the sum and product of the roots for the quadratic equation $x^2 + 8x - 65 = 0$ is ___.

A. $8, \ -65$

B. $-8, \ -65$

C. $-8, 65$

D. $\frac{-8}{65}$

Answer: B

Watch Video Solution

190. If the order of left hand matrix 3×3 and order of right hand matrix 3×2 then find the order of product matrix is ___.

A. 3×2

B. 3×3

C. 2×3

D. 2×4

Answer: A

Watch Video Solution

191. How many tangents can be drawn to the circle from an exterior point ?

A. one

B. two

C. infinite

D. zero

Answer: B

Watch Video Solution

192. The equation of the straight line whose x and y intercepts are 2 and -3 respectively is ___.

A. $3x - 2y + 6 = 0$

B. $3x + 2y - 6 = 0$

C. $3x - 2y - 6 = 0$

D. $3x - 2y = 0$

Answer: C

Watch Video Solution

193. $(1+\tan\theta+\sec\theta)(1+\cot\theta-\cos ec\theta)$ is equal to

A. 0

B. 1

C. 2

D. -1

Answer: C

Watch Video Solution

194. If the ratio of the height of a tower and the length of its shadow is $\sqrt{3}:1$, then the angle of elevation of the sum had measure.

A. 45°

B. 30°

C. 90°

D. 60°

Answer: D

Watch Video Solution

195. The curved surface area of a right circular cone of height 15 cm and base diameter 16 cm is

A. $60\pi cm^2$

B. $68\pi cm^3$

C. $120\pi cm^2$

D. $136\pi cm^2$

Answer: D

Watch Video Solution

196. If the mean and standard deviation of a data are 8 and 2 respectively then the co-efficient of variation is ___.

A. 0.16

B. 0.25

C. 0.52

D. 0.61

Answer: B

Watch Video Solution

197. If $B \times A = \{(-2, 3), (-2, 4), (0, 3), (0, 4), (3, 3), (3, 4)\}$ find the A and B.

A. $\{-2, 3\}$

B. $\{-2, 0, 3\}$

C. $\{3, 4\}$

D. $\{-2, 3, 4\}$

Answer: B

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198. A curve drawn in a graph represents a function, if every ___ line intersects the curve in at most one point.

A. Atmost one point

B. At least one point

C. At most two points

D. At least two points

Answer: A

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199. $7^{4k} =\_\ \_ \pmod{100}$

A. 1

B. 2

C. 3

D. 4

Answer: A

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200. Fill in the blanks, if the term are in G.P. $\frac{1}{8}, \frac{3}{4}, \frac{9}{2}, \ldots$

A. $\frac{27}{64}$

B. 27

C. $\frac{27}{8}$

D. 6

Answer: B

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201. Determine the nature of root for the quadratic equation $2x^2 - 2x + 9 = 0$ is ___.

A. real and unequal roots

B. real and equal roots

C. no real roots

D. None of these

Answer: C

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202. If the graph of the given quadratic equation touch the x-axis at only one point, then the given equation has only one root which is same as saying___.

A. two real and unequal roots

B. no real roots

C. two real and equal roots

D. only one root

Answer: C

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203. If a matrix has 16 elements, what is the number of possible orders=___.

A. 4

B. 5

C. 8

D. 16

Answer: B

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204. If

$\triangle ABC, DE \| BC, AB = 3.6m, AC = 2.4cm$ and $AD = 2.1cm$

then the length of AE=

A. 1.4 cm

B. 1.8 cm

C. 1.05 cm

D. 1.2 cm

Answer: A

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205. What is the slope of the line whose inclination is 30°?

A. $\sqrt{3}$

B. $\frac{1}{\sqrt{3}}$

C. 1

D. 0

Answer: B

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206. Who is the "Father of Trigonometry"?

A. Euclid

B. Al-khwarizmi

C. Pythagoras

D. Hipparchus

Answer: D

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207. $\tan 60^\circ \cos 60^\circ + \cot 60^\circ \sin 60^\circ =$ _____.

A. $\frac{\sqrt{3}}{2}$

B. $\sqrt{3}+1$

C. $\frac{\sqrt{3}+1}{2}$

D. $\frac{\sqrt{3}}{2}+1$

Answer: C

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208. If the height is 2m and the base area is $250m^2$ then find the volume of cylinder=____.

A. $125m^3)$`

B. $500m^3$

C. $500\pi m^3$

D. $125\pi m^3$

Answer: B

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209. The greatest value of a collection of a data is 72 and the least value is 28. Then, the co-efficient of range is ___.

A. 44

B. 0.72

C. 0.44

D. 0.28

Answer: C

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210. Two dice are thrown simultaneously. The probability of getting a doublet is _____.

A. $\frac{1}{6}$

B. $\frac{1}{36}$

C. $\frac{1}{3}$

D. $\frac{2}{3}$

Answer: A

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211. If $f: R \to R$ is defined by $f(x) = x^2 + 2$, then the preimage of 27 are ____.

A. $5, -5$

B. $\sqrt{5}, -\sqrt{5}$

C. $5, 0$

D. $0, 5$

Answer: A

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212. If $A = \{a, b, c\}, B = \{2, 3\}$ and $C = \{a, b, c, d\}$ then $n[(A \cap C) \times B]$ is ____.

A. 4

B. 8

C. 6

D. 12

Answer: B

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213. If $f(x) = ax - 2, g(x) = 2x - 1$ and if fog=gof then the value of 'a' is ____.

A. -3

B. 3

C. $\frac{1}{3}$

D. 13

Answer: B

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214. If $a_1 = -1$ and $a_n = \frac{a_{n-1}}{n+2}$ then the value of a_4 is ____.

A. $\frac{-1}{20}$

B. $\frac{-1}{4}$

C. $\frac{1}{840}$

D. $\frac{-1}{120}$

Answer: D

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215. The first term of an A.P. whose 8th and 12th term are 39, 59 respectively.

A. 5

B. 6

C. 4

D. 3

Answer: C

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216. Sum of infinity terms of a G.P. is 12 and the first term is 8. What is the fourth terms of the G.P is ___.

A. $\frac{8}{27}$

B. $\frac{4}{27}$

C. $\frac{8}{20}$

D. $\frac{1}{3}$

Answer: A

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217. Sum of first 'n' terms of the series $\sqrt{2}+\sqrt{8}+\sqrt{18}+\ldots$ is ___.

A. $\frac{n(n+1)}{2}$

B. $\sqrt{n}$

C. $\frac{n(n+1)}{\sqrt{2}}$

D. 4

Answer: C

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218. $\frac{x^2+7x+12}{x^2+8x+15} \times \frac{x^2+5x}{x^2+6x+8} =$ _ _.

A. $x + 2$

B. $\frac{x}{x+2}$

C. $\frac{35x^2 + 60x}{48x^2 + 120}$

D. $\frac{1}{x+2}$

Answer: B

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219. The real roots of the quadratic equation $x^2 - x - 1 = 0$ are ___.

A. $1, 1$

B. $-1, 1$

C. $\frac{1+\sqrt{5}}{2}, \frac{1-\sqrt{5}}{2}$

D. no real roots

Answer: C

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220. If $2A + 3B = \begin{bmatrix} 2 & -1 & 4 \\ 3 & 2 & 5 \end{bmatrix}$ and $A + 2B = \begin{bmatrix} 5 & 0 & 2 \\ 1 & 6 & 2 \end{bmatrix}$ then B=_____.

A. $\begin{bmatrix} 8 & -1 & -2 \\ -1 & 10 & -1 \end{bmatrix}$

B. $\begin{bmatrix} 8 & -1 & 2 \\ -1 & 10 & -1 \end{bmatrix}$

C. $\begin{bmatrix} 8 & 1 & 2 \\ 1 & 10 & 1 \end{bmatrix}$

D. $\begin{bmatrix} 8 & 1 & 0 \\ -1 & 10 & -1 \end{bmatrix}$

Answer: D

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221. The square root of $4m^2 - 24m + 36$ is ___.

A. $|4(m-3)|$

B. $|2(m-3)|$

C. $\left|(2m-3)^2\right|$

D. $|(m-3)|$

Answer: B

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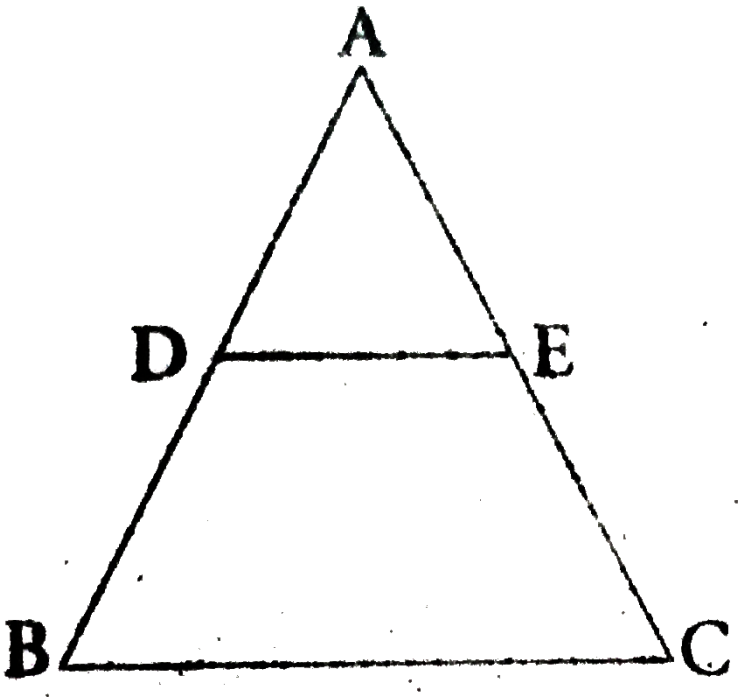
222. In the figure, DE||BC, BD=x-3, BA=2x, CE=x-2, and AC=2x+3. Find the value of x.



A. 3

B. 6

C. 9

D. 12

Answer: C

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223. If ABC is a triangle and AD bisects, AB=4 cm, BD=6 cm, DC=8 cm then the value of AC=___.

A. $\frac{16}{3}$ cm

B. $\frac{32}{3}$ cm

C. $\frac{3}{16}$ cm

D. $\frac{1}{2}$ cm

Answer: A

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224. In a triangle bisector of an angle bisects the opposite side. Find the nature of triangle.

A. right angle

B. equilateral

C. scalene

D. isosceles

Answer: B

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225. A line which intersects a circle at two distinct point is called ____.

A. Point of contact

B. secant

C. diameter

D. tangent

Answer: B

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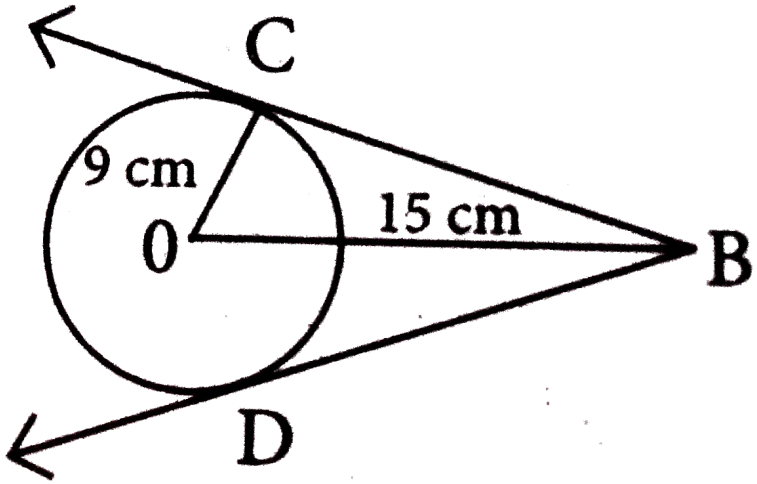
226. In the given figure, if OC=9cm and OB=15cm the value of OB+DB=____.



A. $23cm$

B. $24cm$

C. $27cm$

D. $30cm$

Answer: C

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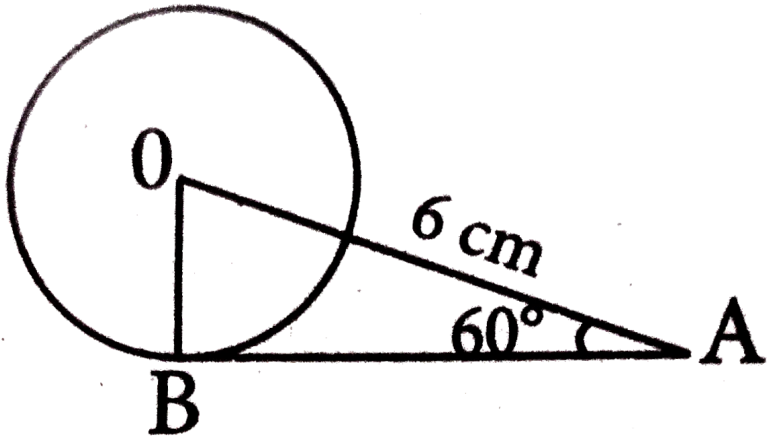
227. In figure $\angle OAB = 60^\circ$ and $OA = 6cm$ then the radius of the circle is ___.



A. $\frac{3}{2}\sqrt{2}$ cm

B. 2 cm

C. $3\sqrt{3}$ cm

D. $2\sqrt{3}$ cm

Answer: C

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228. Find the equation of the straight line passes through the point $(5, 3)$ which is parallel to the y-axis is ____.

A. $y = 5$

B. $y = 3$

C. $x = 5$

D. $x = 3$

Answer: C

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229. The y-intercept of the straight line $3x - 4y + 8 = 0$ is ____.

A. $\frac{-8}{3}$

B. $\frac{3}{8}$

C. 2

D. $\frac{1}{2}$

Answer: C

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230. Find the value of P, given that the line $\frac{y}{2} = x - p$ passes through the point (-4, 4) is ___.

A. -4

B. -6

C. 0

D. 8

Answer: B

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231. The slope of the straight line $2y = x + 8$ is ___.

A. $\frac{1}{2}$

B. 1

C. 8

D. 2

Answer: A

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232. Find the value of 'a' if the line $7y = ax + 4$ and $2y = 3 - x$ are parallel.

A. $a = \frac{7}{2}$

B. $a = \frac{-2}{7}$

C. $a = \frac{2}{7}$

D. $a = \frac{-7}{2}$

Answer: D

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233. If $\tan\theta + \cot\theta = 3$, then $\tan^2\theta + \cot^2\theta =$ ____.

A. 4

B. 7

C. 6

D. 9

Answer: B

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234. If $x = a\sec\theta$ and $y = b\tan\theta$ then $b^2x^2 - a^2y^2$=____.

A. ab

B. $a^2 - b^2$

C. $a^2 + b^2$

D. a^2b^2

Answer: D

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235. The angle of elevation of the top of tree from a point at a distance of 250 m from its base is 60°. The height of the tree is ____.

A. 250 m

B. $250\sqrt{3}$ m

C. $\frac{250}{\sqrt{3}}$ m

D. $200\sqrt{3}$ m

Answer: B

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236. The angle of depression of a boast from $50\sqrt{3}$ high bridge is 30°. The horizontal distance of the boat from the bridge is ___.

A. 150 m

B. $150\sqrt{3}$ m

C. $60m$

D. $60\sqrt{3}$ m

Answer: A

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237. A ladder of length 14 m just reaches the top of a wall. If the ladder an angle of 60° with the horizontal, then the height of the wall is ___.

A. $14\sqrt{3}$ m

B. $28\sqrt{3}$ m

C. $7\sqrt{3}$ m

D. $35\sqrt{3}$ m

Answer: C

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238. The ratio of the volumes of two sphere is 8:27. If r and R are the radii of spheres respectively, then $(R-r):r$ is___.

A. $1:2$

B. $1:3$

C. $2:3$

D. $4:9$

Answer: A

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239. The material of a cone is covered into the shape of a cylinder of equal radius. If the height of the cylinder is 5 cm. then height of the cone is ___.

A. 10 cm

B. 15 cm

C. 18 cm

D. 24 cm

Answer: B

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240. A solid frustum is of height 8 cm. If the radii of its lower and upper ends 3 cm and 9 cm respectively, then its slant height is ___.

A. 15 cm

B. 12 cm

C. 10 cm

D. 17 cm

Answer: C

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241. When Karuna divided surface area of the sphere by the sphere's volume, he got the answer as $\frac{2}{3}$. What is the radius of the sphere?

A. 24 cm

B. 6 cm

C. 54 cm

D. 4.5 cm

Answer: D

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242. If the co-efficient of variation and S.D of a data are 35% and 7.7 respectively, then the mean is ___.

A. 20

B. 30

C. 25

D. 22

Answer: D

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243. A letter is chosen at random from the letter of the word "PROBABILITY". Find the probability that it is not a vowel.

A. $\frac{4}{11}$

B. $\frac{7}{11}$

C. $\frac{3}{11}$

D. $\frac{6}{11}$

Answer: B

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244. When three coins are tossed, the probability of getting the same face on all the three coins is ____.

A. $\frac{1}{8}$

B. $\frac{1}{4}$

C. $\frac{3}{8}$

D. $\frac{1}{3}$

Answer: B

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245. The range of first 10 prime numbers is ____.

A. 9

B. 20

C. 27

D. 5

Answer: C

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246. If the data is multiplied by 4, then the corresponding variance is get multiplied by ___.

A. 4

B. 16

C. 2

D. None of these

Answer: B

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247. If an event occurs surely, then its probability is ___.

A. 1

B. 0

C. $\frac{1}{2}$

D. $\frac{3}{4}$

Answer: A

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248. The probability of an impossible event is ___.

A. 1

B. 0

C. -1

D. $\frac{1}{2}$

Answer: B

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249. If the sm of 10 data values is 265 then their mean is ___.

A. 26.5

B. 265

C. 2650

D. 2650

Answer: A

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250. If a letter is chosen at random from the English alphabets {a, b,.., z}, then the probability that the tletter chosen precedes x

A. $\frac{12}{13}$

B. $\frac{1}{13}$

C. $\frac{21}{26}$

D. $\frac{3}{26}$

Answer: C

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