



MATHS

BOOKS - FULL MARKS MATHS (TAMIL ENGLISH)

SAMPLE PAPER-1

Part I Choose The Correct Answer

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

A. 1

B. 2

C. 3

D. 6

Answer:



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2.

Given

$$F_1 = 1, F_2 = 3 \text{ and } F_n = F_{n-1} + F_{n-2}$$

then F_5 is

A. 3

B. 5

C. 8

D. 11

Answer:



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3. In an A.P., the first is 1 and 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. $f = \{(2, 1), (3, b), (4, b), (5, c)\}$ is a ____.

- A. identity function
- B. one-one function
- C. many-one function
- D. constant function

Answer:



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

A. 0

B. 1

C. 0 (or) 1

D. 2

Answer:



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6. The no-diagonal elements is any unit matrix are ___.

A. 0

B. 1

C. m

D. n

Answer:



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7. If A is a 2×3 matrix and B is 3×4 matrix,
how many columns does AB have

A. 3

B. 4

C. 2

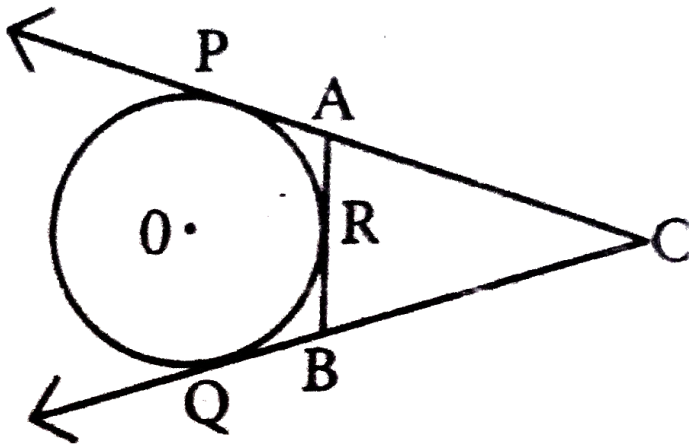
D. 5

Answer:



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



A. 6 cm

B. 5 cm

C. 8 cm

D. 4 cm

Answer:



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9. 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:



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

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

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

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

$$D. \frac{x^2}{a^2} - \frac{y^2}{b^2} = 0$$

Answer:



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

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

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

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

D. $\frac{3}{5}$

Answer:



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

A. 12 cm

B. 10 cm

C. 13 cm

D. 5 cm

Answer:



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13. 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:



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14. Variance of first 20 natural numbers is

A. 32.25

B. 44.25

C. 33.25

D. 30

Answer:



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Part II Answer The Questions

1. Define a function.



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2. Compute x such that $10^4 = x \pmod{19}$.



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3. Simplify

$$\frac{4x^2y}{2z^2} \times \frac{6xz^3}{20y^4}$$



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4. Peri needs 4 hours to complete a work. His friend Yuvan needs 6 hours to complete the

same work. How long will take to complete if they work together?



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5. Find the values of x , y , and z from the following equations

$$\begin{bmatrix} 12 & 3 \\ x & \frac{3}{2} \end{bmatrix} = \begin{bmatrix} y & z \\ 3 & 5 \end{bmatrix}$$



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6. What length of ladder is needed to reach a height of 7 ft along the wall when the base of the ladder is 4 ft from the wall ?



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7. Prove that : $\sqrt{\frac{1 + \cos \theta}{1 - \cos \theta}} = \operatorname{cosec} \theta + \cot \theta.$



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8. The radius of a sphere increases by 25% .
Find the percentage increase in its surface area.



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9. The standard deviation and mean of a data are 6.5 and 12.5 respectively. Find the coefficient of variation.



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10. If $f(x) = 3 + x$, $g(x) = x - 4$, then check whether $f \circ g = g \circ f$.



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11. An organization plans to plant saplings in 25 streets in a town in such a way that one sapling for the first street, three for the second, nine for the third and so on. How many saplings are needed to complete the work?



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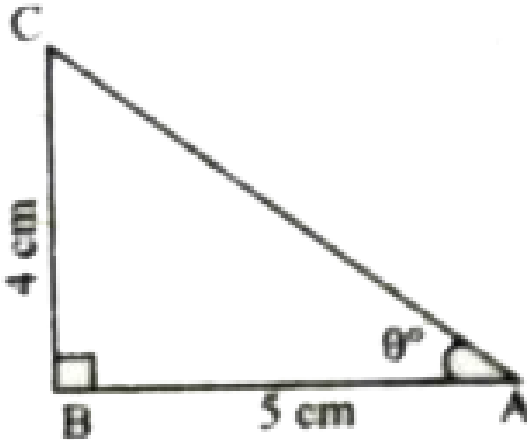
12. Find the 9th term of A.P.

$-11, -15, -19, \dots$



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13. Find the value of $\tan \theta$ in the given triangle.



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14. The vertices of a triangle are $A(-1, 3)$, $B(1, -1)$ and $C(5, 1)$. Find the

length of the median through the vertex C.



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Part Iii Answer The Questions

1. Let f be function $f: N \rightarrow N$ be defined by

$$f(x) = 3x + 2, \quad \forall x \in N.$$

Find the images of 1, 2, 3



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2. Let: $f: A \rightarrow B$ be a function defined by

$$f(x) = \frac{x}{2} - 1. \text{ Where } A = \{2, 4, 6, 10, 12\}, B = \{0,$$

1, 2, 4, 5, 9\}. Represents f by

set of ordered pairs,



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3. The ratio of 6th and 8th term of an A.P. is 7:9.

Find the ratio of 9th to 13th term.



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4. The sum of first n , $2n$ and $3n$ terms of an A.P. are S_1, S_2, S_3 respectively. Prove that $S_3 = 3(S_2 - S_1)$.



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5. Find the values of m and n if the following expression are perfect squares.

$$\frac{1}{x^4} - \frac{6}{x^3} + \frac{13}{x^2} + \frac{m}{x} + n$$



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6. If α, β are the roots of the equation $2x^2 - x - 1 = 0$ then form the equation whose roots are $\alpha^2\beta$?



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7. P and Q are the mid-points of the sides CA and CB respectively of a ΔABC , right angled at C. Prove that $4(AQ^2 + BP^2) = 5AB^2$.



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8. Find the equation of a straight line

Passing through $(1, -4)$ and has intercepts which are in the ratio $2:5$



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9. From the top of the tower 60 m high the angles of depression of the top and bottom of a vertical lamp post are observed to be 38° and 60° respectively. Find the height of

the

lamp

post.

$$(\tan 38^\circ = 0.7813, \sqrt{3} = 1.732)$$



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10. Calculate the weight of a hollow brass sphere if the diameter is 14 cm and thickness is 1 mm, and whose density is 17.3g/cm^3 .



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11. Find the coefficient of variation of 24,26,33,37,29,31.



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12. Two dice, one blue and one grey, are thrown at the same time. Write down all the possible outcomes. What is the probability that the sum of the two numbers appearing on the top of the dice is

8





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13. Find two consecutive positive integers, sum of whose squares is 365.



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14. A cylindrical bucket of 32 cm high and with radius of base 18 cm, is filled with sand completely. This bucket is emptied on the ground and a conical heap of sand is formed.

If the height of the conical heap is 24 cm, find the radius and slant height of the heap.



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Part IV Answer All The Questions

1. PQ is a chord of length 8 cm to a circle of radius 5 cm. The tangents at P and Q intersect at a point T. Find the length of the tangent TP.



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2. Draw a triangle ABC of base $BC=8$ cm, $\angle A = 60^\circ$ and the bisector of $\angle A$ meets BC at D such that $BD = 6$ cm.



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3. Draw the graph $y = x^2 + 3x - 4$ and hence use it to solve $x^2 + 3x - 4 = 0$.



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4. A motor boat whose speed is 18km/hr in still water takes 1 hour more to go 24km upstream than to the return downstream to the same spot. Find the speed of the stream.



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