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MATHS

BOOKS - FULL MARKS MATHS (TAMIL ENGLISH)

SAMPLE PAPER 9 (UNSOLVED)

Part I

1. 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:

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2. If HCF of 65 and 117 is expressible in the form 65m-17, then the value of m is

A. 4

B. 2

C. 1

D. 3

Answer:

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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:

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

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

B. $\frac{9y^3}{(21y-21)}$

C. $\frac{21y^2-42y+21}{3y^3}$

D. $\frac{7(y^2-2y+1)}{y^2}$

Answer:

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5. 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 p,q,r are in ..... .

A. A.P.

B. G.P.

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

D. none of these

Answer:

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6. 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°

Answer:

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7. 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 amd the y intercept is 2.6

Answer:

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8. 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. 45.6 m

Answer:

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9. 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:

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10. 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:

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11. 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. $\frac{3}{15}$

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

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

Answer:

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12. If $f = \{(6, 3)(8, 9)(5, 3)(-1, 6)\}$ then the pre-images of 3 are ..... .

A. 5 and -1

B. 6 and 8

C. 8 and -1

D. 6 and 5

Answer:

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13. If α and β are the roots of the equation $x^2 + 2x + 8 = 0$ then the value of $\frac{\alpha}{\beta} + \frac{\beta}{\alpha}$ is ..... .

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

B. 6

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

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

Answer:

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14. If x-y = 3 and x+2y = 6 are the diameters of a circle then the centre is at the point ..... .

A. (0,0)

B. (1,2)

C. (4,1)

D. (1,-1)

Answer:

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Part Ii

1. Let $X = \{3, 4, 6, 8\}$. Determine whether the relation $R = \{x, f(x) \mid \xi nX, f(x) = x^2 + 1\}$ is the function from X to N?

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2. Find k, if $f(k) = 2k - 1$ and $fof(k) = 5$.

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3. Find the least positive value of x such that

$89 = (x + 3)(\text{mod } 4)$

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4. If the first term of an infinite G.P. is 8 and its sum to infinity $\frac{32}{5}$ then find the common ratio.

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

$$\frac{x^3 - 27}{x^3 + x^2 - 6x}$$

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6. Find the square root of the following

$$1 + \frac{1}{x^6} + \frac{2}{x^3}$$

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7. Find x and y if $x\begin{pmatrix} 4 \\ -3 \end{pmatrix} x + y\begin{pmatrix} -2 \\ 3 \end{pmatrix} = \begin{pmatrix} 4 \\ 6 \end{pmatrix}$.

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8. A cat is located at the point $(-6, -4)$ in xy plane. A bottle of milk is kept at (5,11).The cat wishes to consume the milk travelling through

shortest possible distance. Find the equation of the path it needs to take its milk.

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9. If the circumference of a conical wooden piece is 484 cm then find its volume when its height is 105 cm

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10. The range of a set of data is 13.67 and the largest value is 70.08 then the smallest value of ____.

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11. Three rotten eggs are mixed with 12 good ones. One egg is chosen at random. What is the probability of choosing a rotten egg?

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12. Form the quadratic equation whose roots are $3+\sqrt{7}, 3-\sqrt{7}$

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13. If a cos θ - b sinθ = c, show that a sin θ + b cos $\theta = \pm\sqrt{a^2+b^2-c^2}$

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Part Iii

1. A function is defined by $f(x) = 2x - 3$

Find $\frac{f(0)+f(1)}{2}$.

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2. If $f(x) = 2x + 3, g(x) = 1 - 2x$ and $h(x) = 3x$. Prove that $fo(goh) = (fog)oh$

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3. If $S_1, S_2, S_3, \ldots, S_m$ are the sums of n terms of m A.P.'s whose first terms are 1, 2, 4, ..., m and whose common differences are 1, 3, 5, ..., (2m-1) repectively, then show that

$$S_1 + S_2 + S_3 + \ldots + S_n = \frac{1}{2}mn(mn + 1)$$

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4. In an A.P., sum of four consecutive terms is 28 and their sum of their squares is 276 . Find the four numbers.

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5. Simplify

$$\frac{12t^2 - 22t + 8}{3t} \div \frac{3t^2 + 2t - 8}{2t^2 + 4t}$$

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6. The hypotenuse of a right triangle is 6 m more than twice of the shortest side. If the third side is 2 m less than the hypotenuse, find the sides of the triangle ?

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7. Two ships are sailing in the sea on either side of the lighthouse. The angles of depression of two ships as observed from the top of the lighthouse are 60° and 45° respectively. If the distance between the ships is $200\left(\frac{\sqrt{3+1}}{\sqrt{3}}\right)$ metres, find the height of the lighthouse.

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8. Nathan, an engineering student was asked to make a model shaped like a cylinder with two cones attached at its two ends. The diameter of the model is 3 cm and its length is 12 cm. If each cone has a height of 2 cm, find the volume of the model that Nathan made.

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9. The rainfall recorded in various places of five districts in a week are given below.

Rainfall (in mm)	45	50	55	60	65	70
Number of places	5	13	4	9	5	4

Find its standard deviation.

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10. A bag contain 5 whtie and some black balls. If the probability of drawing a black ball from the bag is twice the probability of drawing a white ball then find the number of black balls.

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11. If $A = [320140005]$, show that $A^2 - 7A + 10I_3 = O$.

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12. Find the values of "a" and "b" given that $p(x) = (x^2 + 3x + 2)(x^2 - 4x + a)g(x) = (x^2 - 6x + 9)(x^2 + 4x + b)$ and their G.C.D. is $(x + 2)(x - 3)$

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13. A container open at the top is in the form of a frustum of a cone of height 16 cm with radii of its lower and upper ends are 8 cm and 20 cm respectively. Find the cost of milk which can completely fill a container at the rate of Rs. 40 per litre.

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Part Iv

1. Draw a tangent to the circle from the point P having radius 3.6 cm, and centre at O. Point P is at a distance 7.2 cm from the centre.

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2. Construct a ΔPQR such that QR= 6.5 cm, $\angle P = 60^\circ$ and the altitude from P to QR is of length 4.5 cm.

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3. Draw the graph of $y = 2x^2 + x - 6$ and hence solve $2x^2 + x - 10 = 0$

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4. Draw the graph of $y = x^2 - 5x + 6$ and hence solve $x^2 - 5x - 14 = 0.$

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