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MATHS

BOOKS - UNITED BOOK HOUSE

MODEL QUESTION PAPERS-SET 6

Exercise

1. Which is nul set

A. a){x : x is an integer,& '-8 lt x lt 9' }

B. b){0}

C. c){m}

D. d){x : x is an irrationat no. & 1 lt x lt }

Answer:

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2. $\sqrt{4i}$=

A. a)$\pm\sqrt{2}(1-i)$

B. b)$\pm(1+i)$

C. c)$\pm(1-i)$

D. d)$\pm\sqrt{2}(1+i)$

Answer:

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3. In the expansion of $\left(1+2x+x^2\right)^{20}$, the no of-terms will be

A. a)20

B. b)40

C. c) 41

D. d) 60

Answer:

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4. If an A.P., the sum of 1st n terms is $2n^2 + 3n$, then the common difference will

A. a) 3

B. b) 4

C. c)5

D. d)6

Answer:

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5. $\frac{x^2}{1-\lambda}+\frac{y^2}{1-\lambda}+1=0$,the equation represent an ellipse if

A. a)$\lambda > 1$

B. b)$\lambda > 3$

C. c)$\lambda < 3$

D. d)$1 < \lambda < 3$

Answer:

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6. If the straight lines 2x - 3y + 5= 0 and ax + 2y. = 6 are parallel, then the value of a is

A. a)-3/4

B. b)-4/3

C. c)3/4

D. d)4/3

Answer:

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7. The value of $\lim_{x \to 4} \frac{x^{5/2} - 4^{5/2}}{x - 4}$ is

A. a)14

B. b)16

C. c)18

D. d)20

Answer:

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8. For all values ofx and y,jf f(x + y) = f(x).f(y), f(5)= 2 and f'(0)=3, the value of f'(5) is

A. a)5

B. b)6

C. c)2

D. d)0

Answer:

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9. Two imbaised coins are tossed at a time. What is the probability of getting at least one tail?

A. a)3/4

B. b)1/4

C. c)1/2

D. d)1/3

Answer:

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10. If the variance of a distribution is 4 coefficient of variation is 5%,then mean of the distribution is ___

A. a)20

B. b)40

C. c)60

D. d)70

Answer:

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11. Find the power set of A = {{a}, {b, c}}

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12. If P = {4. 5},'Q = {7}. find the defined relations from P to Q.

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13. Find the value of $\cos 10^\circ + \cos 110^\circ + \cos 130^\circ$

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14. In $\triangle ABC$, if (c + a + b) (a + b - c) = ab, find the-value of $\angle C$.

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15. If α,βbe the imaginary cube root of unity, then show that $\alpha^4+\beta^4+\alpha^{-1}\beta^{-1}=0$

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16. Find the number of diagonals of a polygon having sides 10.

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17. Show.that there will be-no term containing P^6 in the expansion of $\left(2P^2 - \frac{3}{p}\right)^{11}$

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18. Which term of this-progression 0.004, 0.02, 0.1..... is 12.5?

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19. Find the gradient of a straight line which is passes through the point (-3, 6) and the mid point of (4, -5) and (-2, 9)

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20. Show that the points A(1,2,3) ,B(-1,-2,-1) ,C(2,3,2) and D(4,7,6) are the vertices of a parallelogram ABCD but it is not a rectangle

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21. If 2f(x).+ 3f(-x) = $x^2 - x + 1$, find the value of f(1).

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22. Evaluate: $\lim_{x \to 0} \frac{e^{x^2} - \cos x}{x^2}$

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23. Three Coins are tossed: What is the probability of getting at least one tail?

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24. If mean = 10, coefficient of variation = 50%, find the standard deviation.

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25. In three sets, A,B, C, show that $(A \cap B)' = A' \cup B'$.

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26. If $\tan\theta = \dfrac{\tan\alpha + \tan\beta}{1 + \tan\alpha\tan\beta}$, then show that $\sin 2\theta = \dfrac{\sin 2\alpha + \sin 2\beta}{1 + \sin 2\alpha \sin 2\beta}$

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27. In any $\triangle ABC$, show that 'c sin $\dfrac{A-B}{2} = (a-b)\cos\left(\dfrac{C}{2}\right)$

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28. Show that by mathematical induction, $3.5^{2n+1} + 2^{3n+1}$ is divisible by 17, when

$n > = 0$ is an integer.

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29. If $x + iy = \frac{3}{2 + \cos\theta + i\sin\theta}$ then show that $x^2 + y^2 = 4x - 3$.

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30. The sum of an infinite G.P series is 15 and the sum of the squares of these terms is 45, Find the G.P

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31. How many different arrangements be' possible in'EXAMINATION where two A's will be together?

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32. A ray of light comming from (1, 2) to the x axis at A and reflecting with the point (5, 3). Find the co-ordinate of A.

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33. The co-ordinate of the two verties of a trainge are (15, 0) and (0 ,10): If the co-ordinate of the ortho centre of this triangle is (6, 9),find the co-ordinate of the third vertex of the triangle.

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34. Find the equation of the concentric- cricle of the circle $x^2 + y^2 — 5x + 4y = 1$, which

touches the straight line 4x - 3y = 6.

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35. The distance between the point on x axis and (3, 2, —4) is m unit.Find the co-ordinate of that point which lies on x axis

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36. Prove that,

$$\lim_{n \to \propto} \frac{1^3 + 2^3 + 3^3 + ... + n^3}{n^4} = \frac{1}{4}$$

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37. If $y = \frac{x \sin x + \cos x}{x \cos x - \sin x}$,then show that $\frac{dy}{dx} = \frac{x^2}{(x \cos x - \sin x)^2}$

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38. If n is a such real number that n>3 .then $n^2 > 9$ prove it by the method of contradiction.

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39. The mean and SD of 20 items were found to be 12.5 and 2.1 resp.After that,one item of 23 being added: find the AM and SD of 21 items

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40. Out of 15 articles in a box, three of. them are defective. If 5 articles of them are drawn at random, what is the probability that at least one article are defective.

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41. In $\triangle ABC$,if $(a^2+b^2)\sin(A-B)=(a^2-b^2)\sin(A+B)$,show that the triangle is either isosceles or right angled.

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42. State the fundamental theorem of algebra

Solve : $ix^2-x+12i=0$

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43. If S be the sum. P be the product,and R the sum of the reciprocals of n terms in a G.P., Prove that $P^2 = \left(\frac{S}{R}\right)^n$

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44. Exhibit graphically the solution region of the following system of 'inequations : $2x + y \geq 4$,$x + y \leq 3$,$2x - 3y \leq 6$,x>0,y>0

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45. In quadrilateral PQRS, there are 3, 4, 5, 6 points are taken on PQ. QR. RS,SP respectively:How many triangles are formed from those points?

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46. If the extremitied of a focal chord of the parabola $y^2 = 4ax$ be $\left(at_1^2, 2at_1\right)$ and $\left(at_2^2, 2at_2\right)$,show that $t_1 t_2 = -1$

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47. Find the equation of an ellipse which passes through the point (-2, 2), (3,-1) and the major and minor axes as the axes of co ordinate. Find its eccentricity.

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