MATHS

BOOKS - UNITED BOOK HOUSE

MODEL QUESTION PAPERS-SET 9

Exercise

1. If the argument of a complex number Z - 2 - 3i is $\frac{\pi}{4}$ then the locus of z = x + iy is

A. a)x + y + 1 = 0

B. b)x - y + 1 = 0

C. c)x + y = 1

D. d)x - y = 1

Answer:

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2. The solution set $\left|\frac{1}{x}-2\right|<4$ are

A. a)$x<-\frac{1}{2}$ or $x>\frac{1}{6}$

B. b)$x<-\frac{1}{2}$ and $x>\frac{1}{6}$

C. c)$x>\frac{1}{6}$

D. d)$x<-\frac{1}{2}$

Answer:

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3. If x, y, z are the three consecutive term of an AP, then the value of x + y + z is

A. a)3x

B. b)3y

C. c)3z

D. d)3

Answer:

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4. Equation of straight line parallel to the y axis and passes through (-2, 3) is

A. a)x+2=0

B. b)y+2=0

C. c)y+3=0

D. d)y-3=0

Answer:

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5. Length of the radius of the circle $x^2 + y^2 - 4x + 2y = 20$is

A. a)5 unit

B. b)$\sqrt{5}$ unit

C. c)25 unit

D. d)20 unit

Answer:

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6. If f(9) = 9, f'(9) = 4, then the value of $\lim_{x \to 9} \frac{\sqrt{f(x)} - 3}{\sqrt{x} - 3}$ is

A. a)1

B. b)2

C. c)3

D. d)4

Answer:

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7. The value of $\lim_{x \to 0} \frac{2^x - 1}{\sqrt{1 + x} - 1}$ is

A. a) $\log_e 2$

B. b) $\frac{1}{2}\log_e 2$

C. c) $\log_e 4$

D. d) $3\log_e 2$

Answer:

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8. Two dice are thrown at a time. The*, probability that the sum of tw,o numbers is equal to 8 is

A. a) 2/9

B. b) 7/36

C. c)1/18

D. d)5/36

Answer:

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9. G.M. of 3, 6, 24, 48 is

A. a)11

B. b)12

C. c)13

D. d)14

Answer:

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10. If the number of elements of set A are n, then show that the number of sub sets of A are 2^n.

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11. If R is a defined relation of A = {0. 1. 2. 3. 4. 5} such that $R = \{(x, x+5) : x \in A\}$, find the domain and range.of R.

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12. Prove that

$\tan(\pi/4+\theta)-\tan(\pi/4-\theta)=2\tan 2\theta$

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13. Three sides of a triangle are. 3 cm, 5 cm, 7 cm. Find the value of its greatsest angle

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14. If $\left|\frac{Z-5i}{Z+5i}\right|=1$,then show that $Z\in R$

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15. In a plane, if n number.of parallel lines intersect the P numbers of parallel' lines then how many parallelogram are formed?

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16. In the expansion of $\left(3x^2 - \frac{1}{x^3}\right)^{10}$:find the 7th term.

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17. If the sum of 1st n term of an AP is n(3n + 5), find its 10th term

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18. If the three straight lines y = 3x- 1, 2y = x + 3 and 3y - 4 = mx are concurrent, then find the value of m.

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19. Find the co-ordinate of the image of (3, 2, -4) on xy plane.

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20. If S=$at^2 + bt + c$ find $\left[d\frac{s}{dt}\right]_{,} t = 2$

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21. If $f(x) = \frac{1}{x}$, then show that $\lim_{h \to 0} \frac{f(2+h) - f(2)}{h} = -\frac{1}{4}$

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22. Find the probability of 53 Sunday in a Leap year ?

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

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

C. 0

D. 1

Answer: B

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23. Show that the mean deviation with respect to Arithmetic mean is zero

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24. If f(x)=$\frac{1}{x^2}$,show that $f(x)-f(x+1)=\frac{2x+1}{x^2(x+1)^2}$and hence again show that

$$\frac{3}{1^2.2^2}+\frac{5}{2^2.3^2}+\frac{7}{3^2.4^2}+\ldots+\frac{2n+1}{n^2(n+1)^2}=\frac{n^2+2n}{(n+1)^2}$$

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25. If $a\cos\phi = b\cos\theta$, show that $a\tan\theta + b\tan\phi = (a+b)\tan\left(\frac{\theta+\phi}{2}\right)$

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26. Show that $\tan 20^\circ \tan 40^\circ \tan 80^\circ = \sqrt{3}$

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27. Prove the following by the method of mathematical induction. :$n^3 + (n+1)^3 + (n+2)^3$ is divisible by 9,

when n is a positive integer.

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28. If the sum of $1 + 2r + 3r^2 + 4r^3 + \ldots\infty \frac{9}{16}$, find the value of r.

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29. In how many ways can the crew of an 8-oared boat be arranged if 2 of the crew can row only on the stroke side,and 1 can row only on the bow side?

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30. Express $\frac{\sqrt{3}-i}{1-\sqrt{3}i}$ in modulus amplitude form

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31. In $\triangle XYZ$ the equation of the perpendicularbisector of XY and XZ arc x-y + 5 = 0 and x + 2y= 0, If the coordinate of x is (1.-2),■ then find the equation of YZ.

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32. Find the co-ordinate of the image of the point (-3, -1), with respect to the straight line.2x + 3y + 22 = 0

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33. Show that the circle with the portion of the line $3x + 4y = 12$ intercepted between the axes as diameter passes through the origin.

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34. Find the equation to the locus of a point whose distance from YZ plane-is twice the distance from the point (-2, 1, -1).

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35. Evaluate the following limits :

$$\lim_{x \to 0} \frac{x \tan 2x - 2x \tan x}{(1 - \cos 2x)^2}$$

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36. If $f(x) = |x - 1|1 + x^2$.Is f'(x) exist?examine it.

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37. Using contrapositive method show tha the compund statement .is true or not. If x and y are odd integers,'then xy is also a odd integer.

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38. Show that $\sqrt{3}$is irrational. (Use the method of contradiction).

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39. If the letters of the word PROBABILITY be arranged at random, find the probability to remake the word PROBABILITY.

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40. AM and SD of 7- observations are 8 and 4. If 5.of the 7 observations are 2, 6, 8, 12, 14, find the other 2

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41. Find the maximum and minimum value of $5\cos\theta + 12\sin\theta + 12$

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42. Show that the equations, $\sin^2\theta = \sin^2\alpha, \cos^2\theta = \cos^2\alpha$ and $\tan^2\theta = \tan^2\alpha$ are same and the solution of each of them are $n\pi \pm \alpha$

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43. Solve : $\bar{z} = iz^2$ (z being a complex number)

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44. Find the sum of the numbers from 1 to 100 which are not divisible by 3 and 5.

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45. Out of 17 comodities 12 are same type and 5 are different type. Find the number of combinations if 13 comodities are taken at a time.

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46. Show that the equation of the cord.of the parabola $x^2 = 4ay$through $(x_1, y_1)$and $(x_2, y_2)$the points on its is $(x - x_1)(x - x_2) = x^2 - 4ay$.

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47. Find the equation of the ellipse whose foci are (2, 3) and (-2, 3) and whose length of semi minor axis is $\sqrt{5}$

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48. Find the equation of a hyperbola whose focus. equation of directrix and eccentricity are (2, 0), 4x - 3y = 2 and 5/4respectively

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