MATHS

BOOKS - UNITED BOOK HOUSE

TAKI HOUSE

Exercise

1. Z is a complex number. If I Z I = 4 and $arg(Z) = \frac{5\pi}{6}$,then the value of Z is

A. a)$-2\sqrt{3}$+2i`

B. b)$2\sqrt{3} + 2i$

C. c)$2\sqrt{3} - 2i$

D. d) $-\sqrt{3}+i$

Answer:

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2. The amplitude of the complex no is (a<0) is

A. a) 0

B. b) $\frac{\pi}{2}$

C. c) $\frac{3\pi}{2}$

D. d) $\frac{\pi}{2}$

Answer:

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3. For real x,the least value of (x-2)(x-3)+1 is___

A. a)3/2

B. b)3/4

C. c)3

D. d)None of these

Answer:

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4. The sum of first 5 terms of an arithmetic progression is 80,third term will be __

A. a)16

B. b)25

C. c)10

D. d)12

Answer:

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5. If $\sin\theta = \frac{4}{5}$ and θ=positive acute angle then the value of $\tan 2\theta$___

A. a)-24/7

B. b)24/7

C. c)7/24

D. d)-7/24

Answer:

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6. The greatest value of $3\cos\theta + 4\sin\theta + 15$is __

A. a)10

B. b)20

C. c)-10

D. d)-20

Answer:

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7. The value of $\frac{\cos 2^\circ + \sin 2^\circ}{\cos 2^\circ - \sin 2^\circ}$is ---

A. a)$\tan 47^\circ$

B. b)$\tan 43^\circ$

C. c)$\tan 2^\circ$

D. d)$\cot 2^\circ$

Answer:

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8. The value of $\sin 200^\circ + \cos 200^\circ$ is ___

A. a)Negative

B. b)Positive

C. c)Zero

D. d)Zero or positive.

Answer:

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9. If x=t+(1/t), y=t-(1/t) and t=parameter then the locus of the point (x, y) is __

A. a)$x^2 + y^2 = 4$

B. b)xy=4

C. c)$x^2 - y^2 = 4$

D. d)x-y=4

Answer:

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10. The distance between the two straight lines $3x+4y-9=0$ and $6x+8y-15=0$ is ___

A. a)3/2 unit

B. b)3/10 unit

C. c)6 unit

D. d)none

Answer:

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11. if the Pth term of an A.P. is q and qth term is P.Then show that the nth term is p+q-n

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12. Find the value of $\left(\frac{1+\sqrt{-3}}{2}\right)^{100}+\left(\frac{1-\sqrt{-3}}{2}\right)^{100}$

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13. If $\alpha$and β be two roots of the equation (x-a)(x-b)=c then show that a and b are the roots of $(x-\alpha)(x-\beta)+c=0$

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14. Evaluate :

$\cos^2\left(\frac{\pi}{8}\right)+\cos^2\left(\frac{3\pi}{8}\right)+\cos^2\left(\frac{5\pi}{8}\right)+\cos^2\left(\frac{7\pi}{8}\right)$

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15. If $\cos\alpha+\cos\beta=\frac{2}{3}$ and $\sin\alpha+\sin\beta=\frac{2}{5}$ then find the vvalue of $\tan\left(\frac{\alpha+\beta}{2}\right)$

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16. If $\cos ec\theta+\sec\theta=\cos eca+\sec\alpha$,then show that $\tan\left(\frac{\theta+\alpha}{2}\right)=\cot\theta\cot\alpha$

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17. x=2cost+3y=2sint+5 and t=parameter find the locus of the point (x,y)

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18. Find the equations of a straight line parallel to x-axis and passes through (3,-5)

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19. Prove by mathematical induction ,$3^{2n+1}+2^{n+2}$is divisible by 7,$n \in N$

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20. Factorise:$x^2+y^2+z^2-xy-yz-zx$

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21. Solve :$2y^2+3y+8-6i=0$

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22. The sum of first three terms of an arithmetic progression with n terms is x and the sum of last three terms is y.Show that the sum of n terms is n/6(x+y)

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23. Show that $\frac{\sqrt{3}}{\sin 20^\circ} - \frac{1}{\cos 20^\circ} = 4$

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24. If $\tan(\alpha + \beta) = a + b$ and $\tan(\alpha - \beta) = a - b$ then show that $a \tan \alpha - b \tan \beta = a^2 - b^2$

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25. Show that, $\tan 7\left(\frac{1^{\circ}}{2}\right) = \sqrt{6} - \sqrt{3} + \sqrt{2} - 2$

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26. Show that the area of the triangle formed by the lines $y = m_1 x + c_1, y = m_2 x + c_2$ and $x = 0$ is $\frac{(c_1 - c_2)^2}{2|m_1 - m_2|}$

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27. Find the co-ordinate of the orthocentre of a triangle whose vertices are A(-2,-3),B(6,1)and C(1,6).

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28. If $\arg\left(\frac{z-1}{z+1}\right) = \frac{\pi}{4}$„ then show that in complex plane, the locus of z is a cricle.

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29. Find the sum of n terms of 12+105+1008+10011+....

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30. Show that

$\sin^2(x+\alpha) + \sin^2(x+\beta) - 2\cos(\alpha-\beta).\sin(x+\alpha)\sin(x+\beta)$

is independatn of x.

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31. If $\cos\alpha = \frac{x}{y+z}$, $\cos\beta = \frac{y}{z+x}$ and $\cos\gamma = \frac{z}{x+y}$ then show that $\tan^2\left(\frac{\alpha}{2}\right) + \tan^2\left(\frac{\beta}{2}\right) + \tan^2\left(\frac{\gamma}{2}\right) = 1$

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32. A variable straight line passes through the point of intersection of the staright lines x/a+y/b=1 and x/b+y/a=1 and intersects the axes at P and Q.Find the locus of mid-point of Pq.

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33. Find the maximum value of $24x - 8 - 9x^2$ for real x

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

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

C. 8

D. none of these

Answer:

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34. Marks of students in a test is

A. attribute

B. discrete variable

C. continuous variable

D. none of these

Answer:

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35. Mode depends on change of

A. origin only

B. scale only

C. both origin and scale

D. neither origin nor scale

Answer:

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36. A train ran at x km per hour from A to B and returned from B to A at y km for hour. The average speed (in km hour) is

A. $\frac{x+y}{2}$

B. $\sqrt{xy}$

C. $\frac{2xy}{x+y}$

D. none of these

Answer:

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37. The mode can be obtained geometrically from

A. ogive

B. histogram

C. frequency polygon

D. none of these

Answer:

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38. Bar diagrams are applicable to represent.

A. time series data

B. spatial series data

C. both a and b

D. none of these

Answer:

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39. What is the difference between line diagram and ratio chart?

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40. Define frequency density of a class interval.

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41. The A.M. of 1, 2, 2^2,.....2^9 is_____(fill in the blanks)

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42. The difference between the upper and lower limits of a class interval is its width. (write True or false)

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43. Describe cross sectional data with their utility.

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44. Define ordianl and nominal data.

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45. If the relation between two variables y and x is $x - 3y = 6$ and S.D. of y is 2, then find the variance of 'x.

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46. What are the merits of arithmetic mean?

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47. Write the two meanings of statistics.

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48. Write down the merits and demerits of mass questionnaire method.

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49. Write the significance of E.T.S.

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50. Compare bantulation with diagrammatic representation of data.

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51. How would you construct a frequency distribution of a continuous variable?

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52. If $x > 0, y > 0, z > 0$ and $x + y + z = 1$, prove that $(1 + x)(1 + y)(1 + z) \geq 8(1 - x)(1 - y)(1 - z)$

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53. Find the arithmetic mean of 7, 77, 777.____upto p^{th} term.

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54. If the values of a variable are in G.P, then prove that A.M., G.M., H.M. of the values are also in G.P.

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55. For a set of positive quantities, Prove that $A.M. \geq GM \geq H.M.$.

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56. Show that $\sum_{i=1}^{n} (x_i - A)^2$ is minimum when $A = \bar{x}$.

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