MATHS

BOOKS - IPUCET PREVIOUS YEAR PAPERS

MATHS (HINGLISH)

GGSIPU MATHEMATICS 2009

Mcqs

1. If z_1, z_2, z_3 are three complex numbers such that there exists a complex number z with

$|z_1 - z| = |z_2 - z| = |z_3 - z|$ show that z_1, z_2, z_3 lie on a circle in the Argand diagram.

A. A straight line

B. A circle

C. A parabola

D. An ellipse

Answer:

Watch Video Solution

2. Prove that the complex numbers z_1, z_2 and the origin form an equilateral triangle only if

$z_1^2 + z_2^2 - z_1 z_2 = 0.$

A. $z_1 z_2$

B. $z_1 + z_2$

C. $2z_1 z_2$

D. $z_1 - z_2$

Answer:

Watch Video Solution

3. Three numbers form an increasing G.P. If the middle number is doubled, then the new numbers

are in A.P. The common ratio of the G.P. is $2-\sqrt{3}$ b. $2+\sqrt{3}$ c. $\sqrt{3}-2$ d. $3+\sqrt{2}$

A. 2 - $\sqrt{3}$

B. $2 \pm \sqrt{3}$

C. $3\sqrt{2}$

D. $3+\sqrt{2}$

Answer:

Watch Video Solution

4. If the quadratic equation $ax^2+2cx+b=0$ and $ax^2+2bx+c=0(b \neq c)$

have a common root, then $a + 4b + 4c =$

A. -2

B. 1

C. -1

D. None of these

Answer:

Watch Video Solution

5. If one root of the equation $ax^2 + bx + c = 0,$ is two times the other, then $b^2 : ac = ?$

A. $b^2 = 9ac$

B. $2b^2$ = 9ac

C. $2b^2 =$ ac

D. b^2 = ac

Answer:

Watch Video Solution

6. The number of ways of distributing 8 distinct toys among 5 children will be

A. 5^8

B. 8^5

C. 8_{ps}

D. 40

Answer:

Watch Video Solution

7. If $C_0, C_1, C_2, \ldots, C_n$ denote the binomial coefficients in the expansion of $(1+x)^n$, then .

1. $C_1 - 2.\ C_2 + 3.\ C_3 - 4.\ C_4 + \ldots + (-1)^{n-1} nC_n =$

A. -1

B. 1

C. 0

D. None of these

Answer:

Watch Video Solution

8. Given , $2x-y+2z=2$, $x-2y+z=-4$, $x+y+\lambda z=4$, then the value of λ such that the given system of equations has no solution is :

A. 1

B. 2

C. 3

D. -4

Answer:

Watch Video Solution

9. If $A = \begin{bmatrix} \alpha & 0 \\ 1 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 0 \\ 5 & 1 \end{bmatrix}$ then value of α for which $A^2 = B$, is

A. 4

B. 3

C. 5

D. None of these

Answer:

Watch Video Solution

10. The probability that at least one of the events $AandB$ occurs is 0.6. If $AandB$ occur simultaneously with probability 0.2, then find $P(A) + P(B)$.

A. 11

B. 1.3

C. 1.2

D. 0.8

Answer:

Watch Video Solution

11. If $\sin\left(\sin^{-1}\left[\frac{1}{5}\right] + \cos^{-1} x\right) = 1$,then x is

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

B. $\frac{2}{5}$

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

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

Answer:

Watch Video Solution

12. The value of $\tan\left[\cos^{-1}\left(\frac{4}{5}\right)+\tan^{-1}\left(\frac{2}{5}\right)\right]$ will be

A. $\frac{6}{11}$

B. $\frac{6}{17}$

C. $\frac{11}{6}$

D. $\frac{17}{6}$

Answer:

Watch Video Solution

13. If in ΔABC, $\tan. \frac{A}{2} = \frac{5}{6} = \frac{2}{5}$, then prove that a, b, and c are in A.P.

A. AP

B. GP

C. HP

D. None of these

Answer:

Watch Video Solution

14. The value of $cos\frac{\pi}{5}cos.2\frac{\pi}{5}cos4\frac{\pi}{5}cos8\frac{\pi}{5} =$

A. $\frac{1}{16}$

B. $-\frac{1}{16}$

C. 0

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

Answer:

Watch Video Solution

15. The distance between the line $3x + 4y = 9$ and $6x + 8y = 15$ is

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

B. $\frac{3}{8}$

C. $\frac{3}{10}$

D. 6

Answer:

Watch Video Solution

16. The algebraic sum of the perpendicular distances from the points $A(-2, 0), B(0, 2)$ and $C(1, 1)$ to a variable line be zero, then all such lines

A. 1,2

B. a straight line

C. 0,0

D. 2, 1

Answer:

Watch Video Solution

17. The locus of the point of intersection of the lines $x\cos\alpha + y\sin\alpha = p$ and $x\sin\alpha - y\cos\alpha = q, \alpha$ is a variable will be

A. a circle

B. a straight line

C. a parabola

D. an ellipse

Answer:

Watch Video Solution

18. Find the locus of the midpoint of the chords of the circle $x^2 + y^2 = a^2$ which subtend a right angle at the point $(c, 0)$.

A. $x^2 + y^2 = 3a^2$

B. $x^2 + y^2 = \frac{a^z}{3}$

C. $2x^2 + y^2 = a^2$

D. $4x^2 + y^2 = a^2$

Answer:

Watch Video Solution

19. If the line $3x - 2y + p = 0$ is normal to the circle $x^2 + y^2 = 2x - 4y$,then p will be

A. -5

B. 7

C. -7

D. 5

Answer:

Watch Video Solution

20. Find k , if the line y = 2x + k touches the circle

$x^2 + y^2$

$-4x - 2y = 0$

A. $1 < r < 7$

B. $3 < r < 10$

C. $2 < r < 9$

D. $2 < r < 8$

Answer:

Watch Video Solution

21. The equation of the common tangent to the parabolas $y^2 = 2x$ and $x^2 = 16y$ is

A. x + y + 2 = 0

B. x - 3y + 1 = 0

C. x + 2y - 2 = 0

D. x + 2y + 2 = 0

Answer:

Watch Video Solution

22. The equation of the tangent to the parabola y^2 = 8x, which is parallel to the line $2x - y + 7 = 0$,will be

A. y = x + 1

B. y =2 x + 1

C. $y = 3x + 1$

D. $y = 4x + 1$

Answer:

Watch Video Solution

23. The distance of a point on ellipse $\frac{x^2}{6} + \frac{y^2}{2} = 1$ from its centre is $\sqrt{2}$. The eccentric is $\sqrt{2}$ angle of the point will be

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

B. $\frac{\pi}{3}$ or $\frac{2\pi}{5}$

C. $\frac{\pi}{4}$ or $\frac{3\pi}{4}$

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

Answer:

Watch Video Solution

24. The distance between the foci of a hyperbola is 16 and its eccentricity is $\sqrt{2}$ then equation of the hyperbola is $x^2 + y^2 = 32$ b. $x^2 - y^2 = 16$ c. $x^2 + y^2 = 16$ d. $x^2 - y^2 = 32$

A. $x^2 - y^2 = 1$

B. $x^2 - y^2 = 20$

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

D. $x^2 - y^2 = 32$

Answer:

Watch Video Solution

25. The vector of magnitude 9 unit perpencular to the vectors $4\hat{i} - \hat{j} + 3\hat{k}$ and $-2\hat{i} + \hat{j} - 2\hat{k}$ will be

A. $3\hat{i} + 6\hat{j} - 6\hat{k}$

B. $-3\hat{i} + 6\hat{j} + 6\hat{k}$

C. $3\hat{i} - 6\hat{j} - 5\hat{k}$

D. $\hat{i} + 6\hat{j} + 6\hat{k}$

Answer:

Watch Video Solution

26. The value of 'λ' so that the vectors $\hat{i} - 3\hat{j} + \hat{k}, 2\hat{i} + \lambda\hat{j} + \hat{k}$ and $3\hat{i} + \hat{j} - 2\hat{k}$ are coplanar, will be

A. 0

B. 2

C. $-\frac{1}{2}$

D. -4

Answer: D

Watch Video Solution

27. The line passing through the point -1, 2, 3 and perpendicular to the plane x - 2y + 3z + 5 = 0 will be

A. $\frac{x+1}{1} = \frac{y-2}{3} = \frac{z-3}{5}$

B. $\frac{x+1}{1} = \frac{y-2}{3} = -\frac{z-3}{3}$

C. $\frac{x+1}{1} = \frac{y-2}{3} = \frac{z-3}{z}$

D. $\frac{x+1}{1} = \frac{y-2}{-2} = \frac{z-3}{3}$

Answer: D

Watch Video Solution

28. Value of k such that the line $\frac{x-4}{1}=\frac{y-2}{1}=\frac{z-k}{2}$ lies in the plane 2x-4y+z=7 is

A. 5

B. 7

C. 9

D. 11

Answer:

Watch Video Solution

29. Let L be the line of intersection of the planes $2x + 3y + z = 1$ and $x + 3y + 2z = 2$. If L makes an angles $\alpha$with the positive x-axis, then cosα equals $\frac{1}{\sqrt{3}}$ $\frac{1}{2}$ 1 $\frac{1}{\sqrt{2}}$

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

B. $\frac{1}{\sqrt{5}}$

C. $\frac{1}{\sqrt{7}}$

D. $\frac{1}{\sqrt{3}}$

Answer:

Watch Video Solution

30. If $y = \tan^{-1}\sqrt{\frac{1-\cos x}{1+\cos x}}$, prove that $\frac{dy}{dx} = \frac{1}{2}$.

A. sin x cos

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

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

D. $\frac{1}{1+\cos^2 x}$

Answer:

Watch Video Solution

31. $\lim_{x->1} (1-x)Tan\left(\frac{\pi x}{2}\right) =$

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

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

C. π

D. π

Answer:

Watch Video Solution

32. Let f (x = $\begin{cases} \frac{x^2-4x+3}{x^2+2x-3} & x \neq 1 \\ k & x = 1 \end{cases}$ If f (x) is continuous at x= 1, then the value of k will be

A. 1

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

C. -1

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

Answer:

Watch Video Solution

33. Find the point on the curve $y = 2x^2 - 6x - 4$ at which the tangent is parallel to the x-axis

A. 1,3

B. $-1, 3$

C. $1, \ -3$

D. $-1, \ -3$

Answer:

Watch Video Solution

34. Find the point on the parabolas $x^2 = 2y$ which is closest to the point $(0,\ 5)$.

A. $2\sqrt{2}, 0$

B. 0,0

C. 2,2

D. None of these

Answer:

Watch Video Solution

35. The interval in which the function $f(x) = x^2 e^{-x}$ is non-decreasing, is

A. $-\infty, \infty$

B. $-2, 0$

C. $2, \infty)$

D. $(0, 2$

Answer:

Watch Video Solution

36. Let $f(x) = \begin{cases} x^n \sin \frac{1}{x} & x \neq 0 \\ 0 & x = 0 \end{cases}$ Then f(x) is continuous but not differentiable at x=0. If

A. $n \in 0, 1$

B. $n \in 0, 2$

C. $n \in 1, \infty$

D. $n \in -\infty, \infty$

Answer:

Watch Video Solution

37. The domain of the function $f9x\Big) = \left[(\log)_{10}\left(\frac{5x}{4}\right)\right]^{-\frac{1}{2}}$ is `-oo

A. [1, 4]

B. [0, 5

C. 0,1

D. $-1, \infty$

Answer:

Watch Video Solution

38. The function $f(x) = \sin x + \cos x$ will be

A. an even function

B. an odd function

C. a constant function

D. None of these

Answer:

Watch Video Solution

39. $\int \frac{\cos \sqrt{x}}{\sqrt{x}} dx$

A. $2 \sin \sqrt{x} + c$

B. $2 \sin \sqrt{x} + c$

C. $2 \sin x + c$

D. $\sqrt{2} \sin x + c$

Answer:

Watch Video Solution

40. The value of $\int_2^3 \frac{\sqrt{x}}{\sqrt{5-x} + \sqrt{x}} dx is\_\_$

A. $\frac{\sqrt{3}}{2}$

B. $\frac{1}{\sqrt{2}}$

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

D. $\frac{1}{\sqrt{3}}$

Answer:

Watch Video Solution

41. The area common to $y^2 = x$ and $x^2 = y$ is

A. 1 sq unit

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

C. $\frac{1}{4}$ sq unit

D. $\frac{1}{3}$ sq unit

Answer:

Watch Video Solution

42. if $x + y \leq 2, x \geq 0$ then point at which maximum value of 3x + 2y attained will be

A. 0,0

B. $\left(\frac{1}{2}, \frac{1}{2}\right)$

C. 2,0

D. 0,2

Answer:

Watch Video Solution

43. Maximum value of $p = 6x + 8y$

subject to $2x + y \leq 30, x + 2y \leq 24, x \geq 0, y \geq 0$

is

A. 90

B. 120

C. 96

D. 240

Answer:

Watch Video Solution

44. The solution of the equation $(\log)_7(\log)_5\left(\sqrt{x+5}+\sqrt{x}=0\right.$ is...

A. x = - 2

B. x = 2

C. x = 4

D. x = 5

Answer:

Watch Video Solution

45. A balloon is coming down at the arate of 4m/min and its angle of elevation is 45^0 froma point on the ground which has been reduced to 30^0,after 10 min . Balloon will be onthe ground at a distance of how many meters from the observer ?

A. 20 $\sqrt{3}$ m

B. 20(3 + $\sqrt{3}$) m

C. $10\left(3+\sqrt{3}\right)$ m

D. None of these

Answer: B

Watch Video Solution

46. A fair coin is tossed n times. If the probability of getting 7 heads is equal to the probability of getting 9 heads,then the value of n will be

A. 8

B. 13

C. 15

D. None of these

Answer:

Watch Video Solution

47. The probabilities of solving a question by three students are $\frac{1}{2}, \frac{1}{4}, \frac{1}{6}$ respectively. The probability of the equation being solved will be $\frac{33}{48}$ (b) $\frac{35}{48}$ (c) $\frac{31}{48}$ (d) $\frac{37}{48}$

A. $\frac{35}{48}$

B. $\frac{1}{48}$

C. $\frac{11}{16}$

D. $\frac{2}{11}$

Answer:

Watch Video Solution