MATHS

BOOKS - KCET PREVIOUS YEAR PAPERS

MATHEMATICS

Mcqs

1. The value of $\cos\left(\sin^{-1}.\frac{\pi}{3}+\cos^{-1}.\frac{\pi}{3}\right)$ is

A. Does not exist

B. 0

C. 1

D. -1

Answer:

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2. If $A = \begin{pmatrix} 0 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 0 & 0 \end{pmatrix}$, then A^4 is equal to

A. 4A

B. A

C. 2A

D. 1

Answer:

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3. If $A = \{a, b, c\}$, then the number of binary operations on A is

A. 3^9

B. 3

C. 3^6

D. 3^3

Answer:

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4. The domain of the function defined by $f(x) = \cos^{-1}\sqrt{x-1}$ is

A. $[0, 1]$

B. $[1, 2]$

C. $]0, 2]$

D. $[-1, 1]$

Answer:

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5. If $f(x) = \begin{vmatrix} x^3 - x & a + x & b + x \\ x - a & x^2 - x & c + x \\ x - b & x - c & 0 \end{vmatrix}$ then

A. $f(-1) = 0$

B. $f(1) = 0$

C. $f(2) = 0$

D. $f(0) = 0$

Answer:

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6. If A and B are square matrices of same order and B is a skew symmetric matrix, then A'BA is Skew symmetric matrix

A. Skew symmetric matrix

B. Symmetric matrix

C. Null matrix

D. Diagonal matrix

Answer:

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7. If $\begin{pmatrix} 2 & 1 \\ 3 & 2 \end{pmatrix} A = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$, then the maxtrix A is

A. $\begin{pmatrix} 2 & -1 \\ 3 & 2 \end{pmatrix}$

B. $\begin{pmatrix} 2 & 1 \\ 3 & 2 \end{pmatrix}$

C. $\begin{pmatrix} 2 & -1 \\ -3 & 2 \end{pmatrix}$

D. $\begin{pmatrix} -2 & 1 \\ 3 & -2 \end{pmatrix}$

Answer:

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8. If $f(x) = \begin{cases} \frac{1-\cos Kx}{x \sin x}, & \text{if} \quad x \neq 0 \\ \frac{1}{2}, & \text{if} \quad x = 0 \end{cases}$ is continuous at $x = 0$, then the value of

A. ± 1

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

C. 0

D. ± 2

Answer:

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9. If $a_1 a_2 a_3 \ldots\ldots\ldots a_9$ are in A.P. then the value of $\begin{vmatrix} a_1 & a_2 & a_3 \\ a_4 & a_5 & a_6 \\ a_7 & a_8 & a_9 \end{vmatrix}$ is

A. 1

B. $\frac{9}{2}(a_1 + a_9)$

C. $a_1 + a_9$

D. $\log_e(\log_e)$

Answer:

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10. If A is square matrix of order 3 and $|A| = 5$ then find $|AdjA|$.

A. 625

B. 5

C. 125

D. 25

Answer:

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11. If $f(x) = \sin^{-1}\left(\frac{2x}{1+x^2}\right)$, then $f(\sqrt{3})$ is

A. $-\frac{1}{\sqrt{3}}$

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

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

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

Answer:

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12. The right hand and left hand limit of the function $f(x) = \begin{cases} \frac{e^{1/x}-1}{e^{1/x}+1}, & \text{if } x \neq 0 \\ 0, & \text{if } x = 0 \end{cases}$ are respectively

A. -1 and 1

B. 1 and 1

C. 1 and -1

D. -1 and -1

Answer:

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13. If $2^x + 2^y = 2^{x+y}$, then $\frac{dy}{dx}$ is

A. $\frac{2^y - 1}{2^x - 1}$

B. 2^{y-x}

C. -2^{y-x}

D. 2^{x-y}

Answer:

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14. If te curves $2x = y^2$ and $2xy = K$ intersect perpendicularly, then the value of K^2 is

A. 8

B. 4

C. $2\sqrt{2}$

D. 2

Answer:

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15. If $(xe)^y = e^x$, then $\frac{dy}{dx}$ is

A. $\frac{e^x}{x(y-1)}$

B. $\frac{\log x}{(1+\log x)^2}$

C. $\frac{1}{(1+\log x)^2}$

D. $\frac{\log x}{1+\log x}$

Answer:

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16. If $y = 2^{n+1} + \frac{3}{x^n}$, then $x^2\frac{d^2y}{dx^2}$ is

A. y

B. $6n(n+1)y$

C. $n(n+1)y$

D. $x\frac{dy}{dx}+y$

Answer:

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17. The value of $\int\frac{1+x^4}{1+x^5}dx$ is

A. $\tan^{-1}x+\frac{1}{3}\tan^{-1}x^2+C$

B. $\tan^{-1}x+\tan^{-1}x^3+C$

C. $\tan^{-1}x+\frac{1}{3}\tan^{-1}x^3+C$

D. $\tan^{-1}x-\frac{1}{3}\tan^{-1}x^3+C$

Answer:

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18. The maximum value of $\frac{\log_e x}{x}$, if $x > 0$

A. $-\frac{1}{e}$

B. e

C. 1

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

Answer:

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19. If the side of a cube is increased by 5%, then the surface area of a cube is increased by

A. 20%

B. 10%

C. 60%

D. 6%

Answer:

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20. The value of $\int_{-\frac{1}{2}}^{\frac{1}{2}} \cos^{-1} x dx$ is

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

B. π

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

D. 1

Answer:

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21. If

$$\int \frac{2x+1}{(x-1)(x-2)(x-3)}dx - A\log|x-1| + B\log|x-2| + C\log|x-3| -$$

, then the value of A, B and C are respectively.

A. $2, -7, 5$

B. $5, -7, -5$

C. $2, -7, -5$

D. $5, -7, 5$

Answer:

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22. The value of $\int e^{\sin x}\sin 2x dx$ is

A. $2e^{\sin x}(\cos x - 1) + C$

B. $2e^{\sin x}(\sin x - 1) + C$

C. $2e^{\sin x}(\sin x + 1) + C$

D. $2e^{\sin x}(\cos x + 1) + C$

Answer:

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23. The area of the region bounded by the curve $y^2 = 8x$ and the line $y = 2x$ is

A. $\frac{8}{2}$ sq. units

B. $\frac{16}{3}$ sq. units

C. $\frac{4}{3}$ sq. units

D. $\frac{3}{4}$ sq. units

Answer:

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24. The value of $\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \frac{\cos x}{1+e^x} dx$ is

A. -2

B. 2

C. 0

D. 1

Answer:

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25. The value of $\int_0^1 \frac{\log(1+x)}{1+x^2} dx$ is

A. $\frac{\pi}{8}\log 2$

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

C. $\frac{\pi}{4}\log 2$

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

Answer:

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26. The general solution of the differential equation $x^2dy - 2xydx = x^4 \cos x dx$ is

A. $y = \cos x + cx^2$

B. $y = x^2 \sin x + cx^2$

C. $y = x^2 \sin x + c$

D. $y = \sin x + cx^2$

Answer:

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27. The area of the region bounded by the lines $y = 2x + 1$, x - axis and the ordinates $x = -1$ and $x = 1$ is

A. 5

B. $\frac{9}{4}$

C. 2

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

Answer:

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28. The order of the differential equation obtained by eliminating arbitrary constants in the family of curves $c_1 y = (c_2 + c_3)e^{x - c_4}$ is

A. 4

B. 1

C. 2

D. 3

Answer:

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29. If $\vec{a}$ and $\vec{b}$ are unit vectors and θ is the angle between $\vec{a}$ and $\vec{b}$, then $\sin. \frac{\theta}{2}$ is

A. $\left|\vec{a} - \vec{b}\right|$

B. $\left|\vec{a} + \vec{b}\right|$

C. $\frac{\left|\vec{a} + \vec{b}\right|}{2}$

D. $\frac{\left|\vec{a} - \vec{b}\right|}{2}$

Answer:

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30. The curve passing through the point (1, 2) given that the slope of the tangent at any point (x, y) is $\frac{2x}{y}$ represents

A. Hyperbola

B. Circle

C. Parabola

D. Ellipse

Answer:

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31. The two vectors $\hat{i}+\hat{j}+\hat{k}$ and $\hat{i}+3\hat{j}+5\hat{k}$ represent the two slides $\overrightarrow{AB}$ and $\overrightarrow{AC}$ respectively of a ΔABC. The length of the median through A is

A. $\sqrt{14}$

B. $\frac{\sqrt{14}}{2}$

C. 14

D. 7

Answer:

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32. The point $(1, -3, 4)$ lies in the octant

A. Eighth

B. Second

C. Third

D. Fourth

Answer:

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33. If the vectors $2\hat{i} - 3\hat{j} + 4\hat{k}, 2\hat{i} + \hat{j} - \hat{k}$ and $\lambda\hat{i} - \hat{j} + 2\hat{k}$ are coplanar, then the value of λ is

A. 5

B. 6

C. -5

D. -6

Answer:

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34. If $\left|\vec{a} \times \vec{b}\right| + \left|\vec{a} . \vec{b}\right|^2 = 144$ and $\left|\vec{a}\right| = 6$, then $\left|\vec{b}\right|$ is equal to

A. 4

B. 6

C. 3

D. 2

Answer:

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35. The sine of the angle between the straight the $\frac{x-2}{3}=\frac{3-y}{-4}=\frac{z-4}{5}$ and the plane $2x-2y+z=5$ is

A. $\frac{\sqrt{2}}{10}$

B. $\frac{3}{\sqrt{50}}$

C. $\frac{3}{50}$

D. $\frac{4}{5\sqrt{2}}$

Answer:

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36. If a line makes an angle of $\frac{\pi}{3}$ with each of x and y - axis, then the acute angle made by z - axis is

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

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

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

D. $\frac{\pi}{3}$

Answer:

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37. The distance of the point $(1, 2, -4)$ from the line $\frac{x-3}{2} = \frac{y-3}{3} = \frac{z+5}{6}$ is

A. $\frac{\sqrt{293}}{49}$

B. $\frac{293}{7}$

C. $\frac{\sqrt{293}}{7}$

D. $\frac{293}{49}$

Answer:

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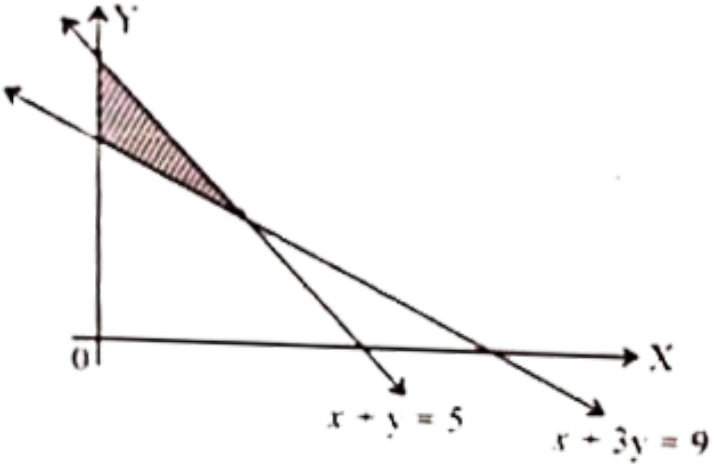
38. The feasible region of an LPP is shown in the figure. If $Z = 11x + 7y$, thent he maximum value of Z occurs at



A. $(3, 2)$

B. $(0, 5)$

C. $(3, 3)$

D. $(5, 0)$

Answer:

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39. Corner points of the feasible region determined by the system of linear constraints are $(0, 3), (1, 1)$ and $(3, 0)$. Let $z = px + qy$, where $p, q > 0$. Condition on p and q so that the minimum of z occurs at (3, 0) and (1, 1) is

A. $p = q$

B. $p = 2q$

C. $p = \frac{q}{2}$

D. $p = 3q$

Answer:

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40. If A and B are two events such that $P(A) = \frac{1}{3}, P(B) = \frac{1}{2}$ and $P(A \cap B) = \frac{1}{6}$, then $P(A'/B)$ is

A. $\frac{1}{12}$

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

C. $\frac{1}{3}$

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

Answer:

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41. A die is thrown 10 times, the probability that an odd number will come up atleast one time is

A. $\frac{1013}{1024}$

B. $\frac{1}{1024}$

C. $\frac{1023}{1024}$

D. $\frac{11}{1024}$

Answer:

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42. The probability of solving a problem by three A, B and C indepoendently is $\frac{1}{2}, \frac{1}{4}$ and $\frac{1}{3}$ respectively. Then the prbability of the problem is solved by any two of them is

A. $\frac{1}{8}$

B. $\frac{1}{12}$

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

D. $\frac{1}{24}$

Answer:

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43. The value of $\sin^2 51^\circ + \sin^2 39^\circ$ is

A. $\cos 12^\circ$

B. 1

C. 0

D. $\sin 12^\circ$

Answer:

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44. If $\tan A + \cot A = 2$, then the value of $\tan^4 A + \cot^4 A =$

A. 5

B. 2

C. 1

D. 4

Answer:

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45. If $A = \{1, 2, 3, 4, 5, 6\}$, then the number of subsets of A which contain atleast two elements is

A. 58

B. 64

C. 63

D. 57

Answer:

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46. If $n(A) = 2$ and total number of possible relations from set A to B is 1024, then n(B) is

A. 5

B. 512

C. 20

D. 10

Answer:

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47. The value of ${}^{16}C_9 + {}^{16}C_{10} - {}^{16}C_6 - {}^{16}C_7$ is

A. ${}^{17}C_3$

B. 0

C. 1

D. ${}^{17}C_{10}$

Answer:

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48. The number of terms in the expansion of $(x + y + z)^{10}$ is

A. 110

B. 66

C. 142

D. 11

Answer:

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49. If $P(n): 2^n < n!$

Then the smallest positive integer for which $P(n)$ is true if

A. 5

B. 2

C. 3

D. 4

Answer:

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50. If $z = x + iy$, then the equation $|z + 1| = |z - 1|$ represents

A. y-axis

B. a circle

C. a parabola

D. x - axis

Answer:

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51. If the parabola $x^2 = 4xy$ passes through the point $(2, 1)$, then the length of the latus rectum is

A. 8

B. 1

C. 4

D. 2

Answer:

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52. If the sum of n terms of an A.P. is given by $S_n = n^2 + n$, then the common difference of the A.P. is

A. 6

B. 4

C. 1

D. 2

Answer:

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53. The two lines $lx + my = n$ and $llx + m'y = n'$ are perpendicular if

A. $lm' + ml' = 0$

B. $ll' + mm' =$

C. $lm' = ml'$

D. $lm + l'm' = 0$

Answer:

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54. The standard deviation of the data 6, 7, 8, 9, 10 is

A. 10

B. $\sqrt{2}$

C. $\sqrt{10}$

D. 2

Answer:

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55. $\lim_{x \to 0} \left(\frac{\tan x}{\sqrt{2x+4}-2} \right)$ is equal to

A. 6

B. 2

C. 3

D. 4

Answer:

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56. The negation of the statement "for all real numbers x and y, $x + y = y + x$'' is

A. for some real numbers x and y,

$$x - y = y - x$$

B. for some real numbers x and y,

$$x + y \neq y + x$$

C. for some real numbers x and y,

$$x + y = y + x$$

D. for some real numbers x and y,

$$x + y \neq y + x$$

Answer:

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57. Let $f: [2, \infty) \to R$ be the function defined by $f(x) = x^2 - 4x + 5$, then the range of f is

A. $[5, \infty)$

B. $(-\infty, \infty)$

C. $[1, \infty)$

D. $(1, \infty)$

Answer:

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58. If A, B, C are three nutually exclusive and exhaustive events of an experiment such that $P(A) = 2P(B) = 3P(C)$, then $P(B)$ is equal to

A. $\frac{4}{11}$

B. $\frac{1}{11}$

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

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

Answer:

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59. If a relation R on the set $\{1, 2, 3\}$ be defined by $R = \{(1, 1)\}$, then R is

A. Only symmetric

B. Reflexive and symmetric

C. Reflexive and transitive

D. Symmetric and transitive

Answer:

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