MATHS

BOOKS - IPUCET PREVIOUS YEAR PAPERS MATHS (HINGLISH)

GGSIPU MATHMATICS 2011

Mcq

1. The domain of $\cos^{-1}\left(\frac{x-3}{2}\right) - \log_{10}(4-x)$ is

A. 1,4

B. [1,4

C. 1,4]

D. [1,4]

Answer:

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2. If f(x) is a polynomial function of the second degree such that, $f(-3) = 6, f(0) = 6$ and $f(2) = 11$, then the graph of the function, f(x) cuts the ordinate x = 1 at the point

A. 1,8

B. 1,4

C. 1,-2

D. None of these

Answer:

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3. Let A and B be two sets, then $(A \cup B') \cap (A' \cap B)$ is equal to

A. A'

B. A

C. B'

D. None of these

Answer:

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4. The mean of 10 observation is 16.3. By an error one observation id is registered as 32 instead of 23. Then the correct mean is

A. 15.6

B. 15.4

C. 15.7

D. 15.8

Answer:

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5. Mean deviation of 6,8,12,15,10,9 through mean is

A. 10

B. 2.33

C. 2

D. None of these

Answer:

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6. The image of the point (2,1) w.r.t the line x+1=0 is

A. 2,5

B. 0,5

C. $-4, 1$

D. $-2, \ -3$

Answer:

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7. The value of x which satisfies $8^{1+\cos x \cos^2 x + \cdots} = 64$ in $[-\pi, \pi]$ is

A. $\pm\frac{\pi}{2}, \pm\frac{\pi}{3}$

B. $\pm\frac{\pi}{3}$

C. $\pm\frac{\pi}{2} \pm\frac{\pi}{6}$

D. $\pm\frac{\pi}{6}, \pm\frac{\pi}{3}$

Answer:

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8. Let $\vec{d} = \lambda\left(\vec{a} \times \vec{b}\right) + \mu\left(\vec{b} \times \vec{c}\right) + \nu\left(\vec{c} \times \vec{a}\right)$ and $\left[\vec{a} \quad \vec{b} \quad \vec{c}\right] = \frac{1}{8}$, then $\lambda + \mu + \nu =$

A. d.a+b+c

B. 2d.a+b+c

C. 4d.a+b+c

D. 8d.a+b+c

Answer:

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9. The length of the normal to the curve $y = a\cos h\left(\frac{x}{a}\right)$ at any point varies as

A. ordinate

B. abscissa

C. square of the ordinate

D. square of the abscissa

Answer:

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10. The slope of the tangent of the curve $y = \int_0^x \frac{dx}{1+x^3}$ at the point where $x = 1$ is

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

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

C. 1

D. None of these

Answer:

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11. If $f(x) = a\ln|x| + bx^2 + x$ has extremas at $x = 1$ and $x = 3$ then:

A. $a - \frac{3}{4}, b = -\frac{1}{8}$

B. $a = \frac{3}{4}, b = -\frac{1}{8}$

C. $a = -\frac{3}{4} b = \frac{1}{8}$

D. None of these

Answer:

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12. In the expansion of $\left(x^3 - \frac{1}{x^2}\right)^n$, $n \in N$ if sum of the coefficients of x^5 and x^{10} is 0 then n is

A. 25

B. 20

C. 15

D. None of these

Answer:

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13. Let z_1 and z_2 be theroots of the equation $z^2 + az + b = 0$ z being compex. Further, assume that the origin z_1 and z_2 form an equilatrasl triangle then (A) $a^2 = 4b$ (B) $a^2 = b$ (C) $a^2 = 2b$ (D) `a^2=3b

A. $a^2 = b$

B. $a^2 = 2b$

C. $a^2 = 3b$

D. $a^2 = 4b$

Answer:

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14. If $f: R \to R$ is continuous such that $f(x + y) = f(x).\, f(y)\, \forall x, y \in R$ and $f(1) = 2,$ then $f(100) =$

A. 100

B. 50

C. 200

D. 0

Answer:

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15. IF the function f(x) defined by

$f(x) = x \sin \frac{1}{x}$ for $x \neq 0$

$= K$ for $x = 0$

is continuous at $x = 0$, then k=

A. continuous but not differentiable at x=0

B. discontinuous but differentiable at x=0

C. differentiable at x=0

D. can not be determined

Answer:

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16. The value of the determinant $\begin{vmatrix} 1 & a & a^2 - bc \\ 1 & b & b^2 - ca \\ 1 & c & c^2 - ab \end{vmatrix}$ is.....

A. 0

B. 1

C. abc

D. $a - bb - cc - a$

Answer:

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17. $\cos 1 + \cos 2 + \cos 3 + \ldots + \cos 180$

A. 0

B. 1

C. -1

D. -2

Answer:

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18. IF a,b,c are in G.P and $a^{\frac{1}{x}} = b^{\frac{1}{y}} = c^{\frac{1}{z}}$ then x,y,z are in

A. AP

B. GP

C. HP

D. None of these

Answer:

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19. If A is a square matrix such that $A^2 = I$, then A^{-1} is equal to (i) I (ii) 0 (iii) A (iv) I+A

A. I

B. 0

C. A

D. I+A

Answer:

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20. 5th term from the end in the expansion of $\left(\frac{x^2}{2} - \frac{2}{x^2}\right)^{12}$ is

A. $-7920x^{-4}$

B. $7920x^8$

C. $7920x^4$

D. $-7920x^4$

Answer:

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21. Which of the following is not a logical statement?

A. 8 is less than 6

B. every set is a finite set

C. kashmir is far from here

D. the sun is a star

Answer:

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22. $\tan^{-1}1+\tan^{-1}2+\tan^{-1}3=$

A. 0

B. π

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

D. None of these

Answer:

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23. $\int \frac{dx}{1+e^{-x}}$ is equal to

A. 0

B. π

C. log 2 -1

D. $-\log 2$

Answer:

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24. IF $|a| = 8, |b| = 3$ and $|a \times b| = 12$, then the value of a.b is

A. 6 or -6

B. $\bar{3}$ or $-12\bar{3}$

C. 8 or -8

D. None of these

Answer:

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25. The value of ${}^{0}C_{0} - {}^{n}C_{1} + {}^{n}C_{2} - \ldots + -1^{n^{n}}C_{n}$ is

A. 1

B. 0

C. 2^{n}

D. n

Answer:

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26. Coefficients of variation of two distributions are 50 and 60, and their arithmetic means are 30 and 25, respectively. Difference of their standard deviations is

A. 1

B. 1.5

C. 2.5

D. 0

Answer:

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27. If I,j,k are the usual three perpendicular unit vectors then the value of i.(j x k)+j.(i x k)+k.(i x j) is

A. 0

B. -1

C. 3

D. 1

Answer:

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28. Solve $ydx - xdy + \log xdx = 0$

A. $y - \log x - 1 = Cx$

B. $x + \log y + 1 = Cx$

C. $y + \log x + 1 = Cx$

D. $y + \log x - 1 = Cx$

Answer:

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29. Which of the following differential equations has $y = c_1 e^x + c_2 e^{-x}$ as the general solution?(A) $\frac{d^2y}{dx^2} + y = 0$ (B) $\frac{d^2y}{dx^2} - y = 0$ (C) $\frac{d^2y}{dx^2} + 1 = 0$ (D) $\frac{d^2y}{dx^2} - 1 = 0$

A. $\frac{d^2y}{dx^2} + y = 0$

B. $\frac{d^2y}{dx^2} - y = 0$

C. $\frac{d^2y}{dx^2} + 1 = 0$

D. $\frac{d^2y}{dx^2} - 1 = 0$

Answer:

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30. $\int \frac{dx}{\sin(x-a)\sin(x-b)}$

A. $\frac{1}{\sin(b-a)}\log\left|\frac{\sin(x+b)}{\sin(x+b)}\right|+C$

B. $\frac{1}{\sin(b-a)}\log\left|\frac{\sin(x+b)}{\sin(x+b)}\right|-C$

C. $\frac{1}{\sin(b+a)}\log\left|\frac{\sin(x+b)}{\sin(x+b)}\right|+C$

D. None of these

Answer:

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31. $\int\frac{dx}{x^2\sqrt{4+x^2}}$

A. $\frac{1}{4}\left(\frac{\sqrt{4-x^2}}{x}\right)+C$

B. $\frac{1}{x}\left(\frac{\sqrt{4-x^2}}{x}\right)+C$

C. $-\frac{1}{4}\left(\frac{\sqrt{4-x^2}}{x}\right)+C$

D. $-\frac{1}{2}\left(\frac{\sqrt{4-x^2}}{x}\right)+C$

Answer:

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32. IF $\tan^{-1} 2, \tan^{-1} 3$ are two angles of a triangle , then the third angle is

A. 30°

B. 45°

C. 60°

D. 75°

Answer:

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33. $\lim_{x \to 0} \left(\frac{16^x + 9^x}{2} \right)^{1/x}$ is equal to

A. $25/2$

B. 12

C. 1

D. $1/4$

Answer:

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34. Let $a = \min\left\{x^2 + 2x + 3, x \in R\right\}$ and $b = \lim_{\theta \to 0} \frac{1 - \cos\theta}{\theta^2}$ then the value of $\sum_{r=0}^{n} a^r \cdot b^{n-r}$ is :

A. $\frac{2^{n+1} - 1}{3.2^n}$

B. $\frac{2^{n+1} + 1}{3.2^n}$

C. $\frac{4^{n+1} - 1}{1.2^n}$

D. One of these

Answer:

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35. The matrix $A = \begin{bmatrix} 0 & 1 & -1 \\ -1 & 0 & 1 \\ 1 & -1 & 0 \end{bmatrix}$ is a

A. diagonal matrix

B. symmetric matrix

C. skew- symmetric matrix

D. identity matrix

Answer:

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36. A teacher takes three children from her class to a zoo at a time, but she does not take the same three children to the zoo more than once. She finds that she went to the zoo 84 times more than a particular child has gone to the zoo. The number of children n her class is a. 12 b. 10 c. 60 d. none of these

A. 12

B. 10

C. 60

D. None of these

Answer:

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37. If $A(-3, 4), B(1, -2), C(5, 6)$ and $D(x, -4)$ are the vertices of a quadrilateral such that area of $\Delta ABC = \Delta ACD$ then $x =$

A. 6

B. 9

C. 69

D. 96

Answer:

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38. The area of the parallelogram formed by the points (1,1,1),(-1,5,5),(2,2,5) is

A. 81

B. 9

C. 336

D. 18

Answer:

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39. IF $f(x) = \left(\frac{9^x}{9^x + 3}\right), then f\left(\frac{1}{2012}\right) + f\left(\frac{2}{2012}\right) + \ldots + \left(\frac{2011}{2012}\right)$ is equal to

A. 1005

B. 1005.5

C. 1006

D. 1006.5

Answer:

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40. $\sqrt{1-\sin^2 101^\circ}\sec .101^\circ$

A. 0

B. 2

C. -1

D. 2

Answer:

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41.

$$\tan^{-1}\left(\frac{1}{1+2}\right)+\tan^{-1}\left(\frac{1}{1+(2)(3)}\right)\tan^{-1}\left(\frac{1}{1+(3)(4)}\right)+...\tan^{-1}\left($$

A. $\frac{n}{n+1}$

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

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

D. $\frac{n}{n+2}$

Answer:

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42. IF $A_{3\times 3}$ and $\det A=3$ then $\det(2adjA)$ is equal to

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43. The probability that a leap year only 52 sundays is

A. $\frac{4}{7}$

B. $\frac{5}{7}$

C. $\frac{6}{7}$

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

Answer:

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44. $\int \frac{2^x}{\sqrt{1-4^x}} dx = \lambda \sin^{-1} 2^x + c$ then λ equals to

A. log 2

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

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

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

Answer:

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45. If S is the cirucmcentre, G the centroid, O the orthocentre of a triangle ABC, then $\overrightarrow{SA} + \overrightarrow{SB} + \overrightarrow{SC}$ is:

A. SG

B. OS

C. SO

D. OG

Answer:

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46. The centre and radius of the sphere $r^2 - 2r \cdot (3i + 4j - 5k) + 1 = 0$ are

A. $3i + 4j - 5k, 1$

B. $-3i + 4j + 5k, 7$

C. $-3i-4j+5k, 7$

D. $3i+4j-5k, 7$

Answer:

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