MATHS

BOOKS - IPUCET PREVIOUS YEAR PAPERS MATHS (HINGLISH)

GGSIPU MATHEMATICS 2008

Mcqs

1. $\int \frac{1}{x^2+4x+13} dx$ is equal to

A. idex $^2 + 4x + 13) + c$

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

C. log $2x2x + 4) +$

D. $-\frac{2x+4}{(x^2+4x+13)^2} + c$

Answer:

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2. The general solution of

$y^2dx + \left(x^2 - xy + y^2\right)dy = 0$, is

A. $\frac{\tan^{-1}(x)}{y} + \log x + c = 0$

B. $\log y + \sqrt{x^2 + y^2} + \log y + c = 0$

C. $\sinh^{-1}\left(\frac{x}{y}\right) + \log y + c = 0$

D. $\sinh^{-1}\left(\frac{x}{y}\right)$ + log y+c =0`

Answer:

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3.

$\int_0^{\pi/4} (\cos x - \sin x)dx + \int_{\pi/4}^{5\pi/4} (\sin x - \cos x)dx + \int_{2\pi}^{\pi/4} (\cos x - \sin x)$

is equal to

A. $\sqrt{2}-2$

B. $2\sqrt{2}-2$

C. $3\sqrt{2}-2$

D. $4\sqrt{2}-2$

Answer:

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4. Out of 40 consecutive integers, two are chosen at random, the probability that their sum is odd is

A. $\frac{14}{29}$

B. $\frac{20}{39}$

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

D. None of these

Answer:

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5. Equations of tangents to the ellipse $\frac{x^2}{9}+\frac{y^2}{4}=1$ which are perpendicular to the line $3x+4y=7,$ are

A. $4x-3y=\pm\sqrt{20}$

B. $4x-3y=\pm\sqrt{12}$

C. $4x-3y=\pm\sqrt{2}$

D. $4x-3y=\pm 1$

Answer:

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6. IF $\left|\overrightarrow{a}\right|=\sqrt{3},\left|\overrightarrow{b}\right|=2$ and $\left|\overrightarrow{a}-\overrightarrow{b}\right|=3$ find the angle between `veca and vecb.

A. $4\sqrt{3}$

B. $6\sqrt{3}$

C. $12\sqrt{3}$

D. $18\sqrt{3}$

Answer:

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7. The solution of the equation $\frac{d^2y}{dx^2} = e^{-2x}$ is

A. $y = \frac{1}{4}e^{-2x} + \frac{cx}{2} + d$

B. $y = \frac{1}{4}e^{-2x} + cx + d$

C. $y = \frac{1}{4}e^{-2x} + cx^2 + d$

D. $y = \frac{1}{4}e^{-2x} + cx^3 + d$

Answer:

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8. The length of the chord of the parabola $x^2 = 4y$ passing through the vertex and having slops cot α is

A. 4 cot $\alpha \cos ec\alpha$

B. 4 tan $\alpha \sec \alpha$

C. 4 sin $\alpha \sec^2 \alpha$

D. None of these

Answer:

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9. The records of a hospital show that $10\,\%$ of the cases of a certain disease are fatal. If 6 patients are suffering from the disease, then the probability that only three will die is

A. $8748x10^{-5}$

B. $1458x10^{-5}$

C. $1458x10^{-6}$

D. $41x10^{-6}$

Answer:

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10. From the point $P(16, 7)$, tangents PQ and PR are drawn to the circle $x^2 + y^2 - 2x - 4y - 20 = 0$ If C is the centre of the circle, then area of quadrilateral PQCR is

A. 450 sq unit

B. 15 sq unit

C. 50 sq unit

D. 75 sq unit

Answer:

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11. If α, β are roots of the equation lx^2 + mx + n = 0,then the equation whose roots are $\alpha^3\beta$ and $\alpha\beta^3$,is

A. $l^4x^2 - \text{nlm}^2 - 2\text{nlx} + n^4 = 0$

B. $l^4x^2 + \text{nlm}^2 - 2\text{nlx} + n^4 = 0$

C. $l^4x^2 + \text{nlm}^2 - 2\text{nlx} + n^4 = 0$

D. $l^4x^2 - \text{nlm}^2 - 2\text{nlx} - n^4 = 0$

Answer:

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12. $\begin{bmatrix} 1 \\ 2 \end{bmatrix}$ [2,1,-1] is equal to

A. $\begin{bmatrix} 2 \\ -1 \\ -2 \end{bmatrix}$

B. $\begin{bmatrix} 2 & -1 & -1 \\ -2 & -1 & 1 \\ 4 & 2 & -2 \end{bmatrix}$

C. $[-1]$

D. not defined

Answer:

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13. $\lim_{x \to \infty} \frac{(2x-3)(4x-5)}{(5x-6)(6x-7)}$ is equal to

A. $\frac{1}{10}$

B. $\frac{4}{15}$

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

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

Answer:

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14. Function f(x) $\begin{cases} x+1 & x<2 \\ 2x-2 & x \geq 2 \end{cases}$ is a continuous function

A. for x =2 only

B. for all real values of x such that x $\neq 2$

C. for all real values of x

D. for all integral values of x only

Answer:

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15. Differential coefficient of $\sqrt{\sec(x)}$ is

A. $\frac{1}{4\sqrt{x}} \sec\sqrt{x} \sin\sqrt{x}$

B. $\frac{1}{4\sqrt{x}} \left(ac\sqrt{x}\right)^{3/2} \sin\sqrt{x}$

C. $\frac{1}{2}\sqrt{x} \sec\sqrt{x} \sin\sqrt{x}$

D. $\frac{1}{2}\sqrt{x}\sec\sqrt{x}^{3/2}. \sin\sqrt{x}$

Answer:

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16. The function $x^5 - 5x^4 + 5x^3 - 1$ is

A. neither maximum nor minimum at x = 0

B. maximum at x=0

C. maximum at x=1 and minimum at x=3

D. minimum at x=0

Answer:

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17. If $x = y\sqrt{1-y^2}, then \frac{dy}{dx}$

A. "xx"

B. $\frac{\sqrt{1-y^2}}{1+2y^2}$

C. $\frac{\sqrt{1-y^2}}{1-2y^2}$

D. 0

Answer:

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18. The ratio in which the line joinng $(2, 4, 5), (3, 5, -4)$ is divided by the zyplane is (A) $2:3$ (B) $3:2$ (C) $-2:3$ (D) $4:3$

A. $2:3$

B. $3:2$

C. $-2:3$

D. $4:-3$

Answer:

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19. The value of $\int_0^1 \frac{x^4+1}{x^2+1}dx$ is

A. $\frac{1}{6}3-4\pi$

B. $\frac{1}{6}3\pi+4$

C. $\frac{1}{6}3+4\pi$

D. $\frac{1}{6}3\pi-4$

Answer:

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20. The solution of the differential equation $\frac{dy}{dx}=y\tan x-2\sin x$ is

A. Y sin x = c+sin 2x

B. Y cos x = c+ $\frac{1}{2}$ sin 2x

C. Y cos x = c- sin 2x

D. $Y \cos x = c + \frac{1}{2} \cos 2x$

Answer:

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21. The value of $1 - \log 2 + \frac{\log 2^2}{2} - \frac{(\log 2)^3}{3} + \cdots$ is

A. log 3

B. log 2

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

D. None of these

Answer:

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22. the maximum value of $f(x) = \frac{x}{4 + x + x^2}$ on $[-1, 1]$ is (i) $-\frac{1}{4}$ (ii) $-\frac{1}{3}$ (iii) $\frac{1}{6}$ (iv) $\frac{1}{b}$

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

B. $-\frac{1}{4}$

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

D. $\frac{1}{6}$

Answer:

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23. If $P(A) = P(B) = x$ and $P(A \cap B) = 0.14,$ then $P(A' \cap B') = \frac{1}{3},$ then

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

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

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

D. $\frac{1}{6}$

Answer:

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24. The focus of the parabola y^2-8x-2y+2 = 0 is

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25. The equation of normal at the point (0,3)of the ellipse $9x^2 + 5y^2 = 45$ is

A. x -axis

B. y -axis

C. y+3=0

D. y -3=0

Answer:

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26. The equation of the tangent parallel to $y - x + 5 = 0$ drawan to $\frac{x^2}{3} - \frac{y^2}{2} = 1$ is

A. x -y+1=0

B. x -y+2=0

C. x+y-1 = 0

D. x+y+2 = 0

Answer:

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27. Let the function f, g, h are defined from the set of real numbers $\mathbb{R}$ to $\mathbb{R}$ such that

$f(x) = x^2 - 1, g(x) = \sqrt{x^2 + 1}, h(x) = \begin{cases} 0 & \text{if } x < 0 \\ x & \text{if } x \geq 0 \end{cases}$. Then $ho(fog)(x)$ is defined by

A. x

B. x^2

C. 0

D. None of these

Answer:

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28. The angle of elevation of the sun when the length of the shadow of a pole is $\sqrt{3}$ times the height of the pole is

A. 150°

B. 30°

C. 60°

D. 45°

Answer:

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29. If $\sin A = n \sin B$ then $\frac{n-1}{n+1} \tan \frac{A+B}{2}$ is equal to

A. $\sin \frac{A-B}{2}$

B. $\tan \frac{A-B}{2}$

C. $\cot \frac{A-B}{2}$

D. None of these

Answer:

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30. $3 \tan^{-1} a$ is equal to

A. $\frac{\tan^{-1}(3a+a^3)}{1+3a^2}$

B. $\frac{\tan^{-1}(3a-a^3)}{1+3a^2}$

C. $\frac{\tan^{-1}(3a+a^3)}{1-3a^2}$

D. $\frac{\tan^{-1}(3a-a^3)}{1-3a^2}$

Answer:

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31. In which quadrant of the complex plane ,the point $\frac{1+2i}{1-i}$ lies ?

A. Fourth

B. First

C. Second

D. Third

Answer:

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32. If sin α and cos α are the roots of the equation px^2 +qx+r = 0,then

A. $p^2 + q^2 - 2pr = 0$

B. $p^2 - q^2 + 2pr = 0$

C. $p^2 - q^2 - 2pr = 0$

D. $p^2 + q^2 + 2pr = 0$

Answer:

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33. If a,b, c are in G.P., then the equations $ax^2 + 2bx + c = 0$ and $dx^2 + 2ex + f = 0$ have common root if $\frac{d}{a}, \frac{e}{b}, \frac{f}{c}$ are in

A. AP

B. GP

C. HP

D. None of these

Answer:

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34. In the expansion of $\left[2x^2 - \frac{1}{x}\right]^{12}$, the term independent of x is

A. 8^{th}

B. 7^{th}

C. 9^{th}

D. 10^{th}

Answer:

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35. The most general values of θ satisfying the two equations $\cos\theta = -\frac{1}{\sqrt{2}}, \tan\theta = 1$ is

A. $2n\pi \pm \frac{x}{6} n \in l$

B. $2n\pi + \frac{7\pi}{6} n \in l$

C. $n\pi + -1^n \frac{\pi}{3} n \in l$

D. $n\pi - 1^n \frac{x}{4} n \in l$

Answer:

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36. The value of $\lim_{x \to \infty} \left(\frac{x^2 + bx + 4}{x^2 + ax + 5} \right)$ is

A. $\frac{a}{b}$

B. 0

C. 1

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

Answer:

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37. Let $f(x) = \begin{cases} \frac{\sin \pi x}{5x}, & x \neq 0 \\ k, & x = 0 \end{cases}$ if f(x) is continuous at x = 0, then k is equal to

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

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

C. 1

D. 0

Answer:

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38. The three vectors a, b and c with magnitude 3, 4 and 5 respectively and $a+b+c=0,$ then the value of $a.\ b+b.\ c+c.\ a$ is

A. 47

B. 25

C. 50

D. -25

Answer:

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39. The maximum value of Z = 4x + 2y subject to the constraints $2x+3y \leq 18, x+y \geq 10, x, y \geq 0$ is

A. 20

B. 36

C. 40

D. None of these

Answer:

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