



MATHS

BOOKS - NTA MOCK TESTS

NTA JEE MOCK TEST 28

Mathematics

- 1. The area of the region enclosed by $f(x) = rac{-2x}{e^x}$ and the x aixs is
 - A. 1 sq.units
 - B. 2 sq.units

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

D. not defined

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2. Let $x_1, x_2, x_3, \ldots, x_k$ be k observations and $w_i = ax_i + b$ for I = 1,2,3...... K, where a and b are constants. If mean of x_i is 52 and their standard deviation is 12 and mean of w_i is 60 and their standard deviation is 15, then the value of a and b should be 15, then the value of a and b should be

A.
$$a = 1.25, b = -5$$

B. a = -1.25, b = 5

C.
$$a = 2.5, b = -5$$

D.
$$a = 2.5, b = 5$$

Answer: A

3. For real values of x, the value of expression $rac{11x^2-12x-6}{x^2+4x+2}$

A. lies between -17 and - 3

B. does not lie between -17 and -3

C. lies between 3 and 17

D. does not lie between 17 and 3

Answer: B

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4. Two distinct numbers are chosen from 1,3,5,7 151,153,155 and multiplied . The probability that the product is a multiple of 5 is

A.
$$\frac{1020}{3003}$$

B. $\frac{1112}{3003}$

C.	1011
	3003
D.	1122

D. <u>3003</u>

Answer: B

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5. If f(x) is a twice differentiable function such that $f''(x) = -f, f'(x) = g(x), h(x) = f^2(x) + g^2(x)$ and h(10) = 10, then h (5) is equal to

A. 5

B. 15

C. 10

D. 17

Answer: C



6. The minimum value of |3z-3|+|2z-4|equal to

B. 1.5 C. 3 D. 1

A. 2

Answer: A

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7. If
$$\displaystyle rac{\lim}{x o 0} \left(1 + px + qx^2
ight)^{\operatorname{cosec} x} = e^5$$
 ,then

A.
$$p=5, q\in R$$

B. p = 5, q > R

C.
$$p=5, q\in R$$

D. q = 5, p = 0

Answer: A

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8. If $\int e^{\sin\theta} (\sin\theta + \sec^2\theta) d\theta$ is equal to $f(\theta) + C$ (where , C is the

constant of integration) and f(0) = 0 , then the value of $f\!\left(rac{\pi}{4}
ight)$ is

A. $e^{\sqrt{2}}$ B. $e^{\frac{1}{\sqrt{2}}}$ C. e^{2}

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

Answer: B

9. A curve passing through the point (1,2) and satisfying the condition that slope of the normal at any abscissa of that point , then the curve also passes through the point

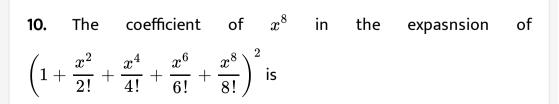
A. (0,0)

B. (2,2)

C. (2,1)

D. (3,2)

Answer: C



A.
$$\frac{1}{135}$$

B. $\frac{2}{315}$
C. $\frac{3}{105}$
D. $\frac{1}{210}$

Answer: A



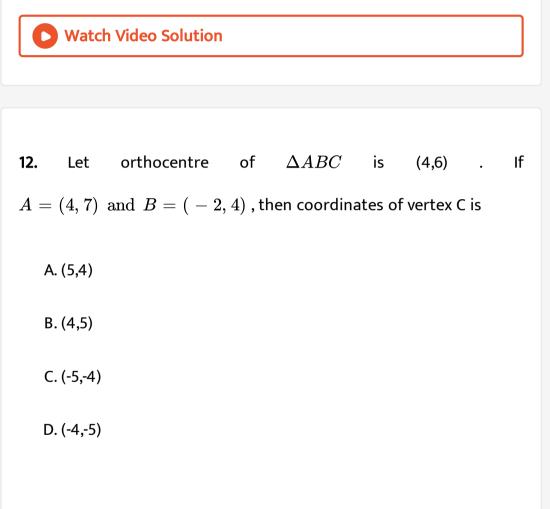
11. Let P and Q be two points on the curves
$$x^2 + y^2 = 2$$
 and $\frac{x^2}{8} + \frac{y^2}{4} = 1$ respectively. Then the minimum

value of the length PQ is

A. 1

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

Answer: B



Answer: A

13. The area bounded by the curve

$$y = |\cos^{-1}(\sin x)| + \left|\frac{\pi}{2} - \cos^{-1}(\cos x)\right|$$
 and the x - axis , where
 $\frac{\pi}{2} \le x \le \pi$, is equal to
A. π^2
B. $\frac{\pi^2}{2}$
C. $\frac{\pi^2}{8}$
D. $\frac{\pi^2}{4}$

Answer: D



14. Let \oplus and \otimes are two mathematical operators . If $p \oplus (q \otimes r)$ is equivalent to $((p \land q) \Rightarrow r)$, then \oplus and \otimes

A. can be \lor and \land respectively

B. can be \land and \lor respectively

C. can both be \Rightarrow

D. can be \Rightarrow and \Leftrightarrow respectively

Answer: C

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15. The point of intersection of the plane 3x - 5y + 2z = 6 with the straight line passing through the origin and perpendicular to the plane 2x - y - z = 4 is

A. (1,-1,-1)

B. (-1,-1,2)

C. (4,2,2)

$$\mathsf{D}.\left(\frac{4}{3},\frac{-2}{3},\frac{-2}{3}\right)$$

Answer: D



16. If
$$D_r = \begin{vmatrix} r & 15 & 8 \\ r^2 & 35 & 9 \\ r^3 & 25 & 10 \end{vmatrix}$$
, then the value of $\sqrt[5]{\left(\left(-\frac{1}{100}\right)\sum_{r=1}^5 D_r\right) - 37}$ is equal to

B. 2

C. 9

D. 3

Answer: D



17. Let
$$I_1 = \int_0^1 e^{x^2} dx$$
 and $I_2 = \int_0^{12} 2^{x^2} e^{x^2} dx$ then the value of

 $I_1 + I_2$ is equal to

A. 1

B. 2

C. e

 $\mathsf{D.}\,e^2$

Answer: C

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18. A pair of tangents are drawn from a point P to the circle $x^2 + y^2 = 1$. If the tangents make an intercept of 2 on the line x=1 then the locus of P is

A.
$$y^2=2(x+1)$$

B.
$$2y^2 = -(x+1)$$

C. $y^2 = 2(x-1)$
D. $y^2 = -2x+1$

Answer: A

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19. Tangents to the parabola $y^2 = 4ax$ at $P(at_1^2, 2at_1)$ and $Q(at_2^2, 2at_2)$ meet at T. If ΔPTQ is right - angled at T, then $\frac{1}{PS} + \frac{1}{QS}$ is equal to (where , S is the focus of the given parabola)

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

B. $\frac{2}{a}$
C. $\frac{1}{2a}$
D. $\frac{1}{4a}$

Answer: A



20. The value of
$$\int_{-1}^{1} \cot^{-1} \left(rac{x+x^3+x^5}{x^4+x^2+1}
ight)$$
 dx is equal to A. $rac{\pi}{2}$

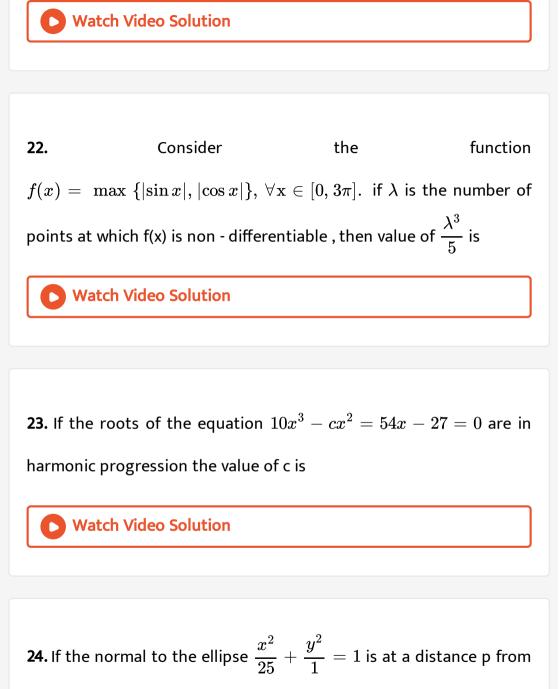
B.
$$\frac{\pi}{4}$$

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

D. π

Answer: D

21. Let
$$\overrightarrow{U} = \hat{i}, \hat{j}, \overrightarrow{V} = \hat{i} - \hat{j}$$
 and $\overrightarrow{W} = 3\hat{i} + 5\hat{j} + 3\hat{k}$. If $\hat{n} = 0$ then $\left|\overrightarrow{W}, \widehat{n}\right|$ is equal to



the origin then the maximum value of p is

25. If
$$A = \begin{bmatrix} 2 & 3 \\ -1 & -2 \end{bmatrix}$$
 and $B = \sum_{r=1}^{10} A^r$, then the value of det

(B)is equal to