



MATHS

BOOKS - NTA MOCK TESTS

NTA JEE MOCK TEST 95



1. 5 boys & 4 girls sit in a straight line. Find the number of ways in which they can be seated if 2 girls aretogether & the other 2 are also together but separate from the first 2.:

A. 5400

B. 10800

C. 21600

D. 43200

Answer: D

Watch Video Solution

2. Let A and B are two non - singular matrices such that $AB = BA^2, B^4 = I$ and $A^k = I$, then k can be equal to

A. 5

B. 10

C. 15

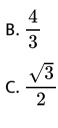
D. 16

Answer: C



3. If g(x) is a differentiable function such that $\int_1^{\sinlpha} x^2 g(x) dx = (\sinlpha - 1), \ orall lpha \in \left(0, rac{\pi}{2}\right)$, then the value of $g\left(rac{1}{3}
ight)$ is equal to





D. 9

Answer: D

Watch Video Solution

4. Let
$$f(heta)=rac{1}{1+(an heta)^{2021}}$$
, then the value of $\sum_{ heta=1^\circ}^{89^\circ}f(heta)$ is

equal to

A. 45

B.44

C.
$$\frac{89}{2}$$

D. $\frac{91}{2}$

Answer: C

Watch Video Solution

5. If the circle $x^2 + y^2 = 4x + 8y + 5$ intersects the line 3x - 4y = m at two distinct points, then the number of possible integral values of m is equal to

A. 51

B. 50

C. 49

D. 48

Answer: C

Watch Video Solution

6. Let 2 planes are being contained by the vectors $\alpha \hat{i} + 3\hat{j} - \hat{k}$, $\hat{i} + (\alpha - 1)\hat{j} + 2\hat{k}$ and $3\hat{i} + 5\hat{j} + 2\hat{k}$. If the angle between these 2 planes is θ , then the value of $\cos^2 \theta$ is equal to

A.
$$\frac{15}{17}$$

B. $\frac{289}{717}$

C.
$$\frac{289}{2151}$$

D. $\frac{17}{2151}$

Answer: C

Watch Video Solution

7. If (1, 2, p), (2, 8, -6) and $(\alpha^2 - 2\alpha, p, 1)$ are ordered triplet pair of the form (x, y, z) which satisfy all the equations $\frac{x}{a} + \frac{y}{b} + \frac{z}{c} = 1, \frac{x}{b} + \frac{y}{c} + \frac{z}{a} = 1$ and $\frac{x}{c} + \frac{y}{a} + \frac{z}{b} = 1$, then the sum of all the values of α is equal to (where, $ab + bc + ca \neq 0$)

A. 3

B. 2

C. 0

 $\mathsf{D.}-2$

Answer: B

Watch Video Solution

8. If
$$\alpha, \beta$$
 and γ are the roots of the equation
 $x^3 - px^2 + qx - r = 0$, then the value of $\frac{\alpha\beta}{\gamma} + \frac{\beta\gamma}{\alpha} + \frac{\gamma\alpha}{\beta}$ is

equal to

A. pq + 3r

 $\mathsf{B.}\,pq+r$

C. pq-3rD. $rac{q^2-2pr}{r}$

Answer: D

9. Let p, q and r be three statements. Consider two compound statements

 $S_1 {:} (p \Rightarrow q) \Rightarrow r \equiv p \Rightarrow (p \Rightarrow r)$

 $S_2 {:} (p \Leftrightarrow q) \Leftrightarrow r \equiv p \Leftrightarrow (q \Leftrightarrow r)$

State in order, whether S_1, S_2 are true of false.

(where, T represents true F represents false)

A. TT

B. TF

C. FT

D. FF

Answer: A

10. Two poles standing on a horizontal ground are of height x meters and 40 meters respectively. The line joining their tops makes an angle of 30° with the ground and the distance between the foot of the poles is $30\sqrt{3}$ meters, then the value of x can be

A. 20

B. 30

C. 10

D. 50

Answer: C



11. If the function $f\!:\!R o A$ defined as $f(x)=\sin^{-1}\!\left(rac{x}{1+x^2}
ight)$ is a surjective function, then the set A is

A.
$$\left[-\frac{\pi}{6}, \frac{\pi}{6}\right]$$

B. $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$
C. $\left[-\frac{\pi}{3}, \frac{\pi}{6}\right]$
D. $\left[0, \frac{\pi}{3}\right]$

Answer: A

Watch Video Solution

12. If function
$$f(x)=egin{cases} a\sqrt{x+7} & 0\leq x<2\ bx+1 & x\geq 2 \end{cases}$$
 is

differentiable $a \geq 0$, then the 2a+4b is equal to

A. 1

B. 5

C. 4

D. 9

Answer: A



13. The integral
$$I=\int\!\!{2\sin x\over (3+\sin 2x)}dx$$
 simplifies to (where, C is

the constant of integration)

A.
$$\ln \left|rac{2+\sin x-\cos x}{2-\sin x+\cos x}
ight| - an^{-1}(\sin x+\cos x) + C$$

 $\mathsf{B}.\ln(\sin x) + \sin 2x + C$

 $C.\sin(2x) - \ln(\cos x) + C$

D.

$$\left|rac{1}{4} ext{ln}
ight|rac{2+\sin x-\cos x}{2-\sin x+\cos x}
ight|-rac{1}{\sqrt{2}} ext{tan}^{-1}igg(rac{\sin x+\cos x}{\sqrt{2}}igg)+C$$

Answer: D



14. The least positive term of an arithmetic progression whose

first two term are
$$rac{5}{2}$$
 and $rac{23}{12}$ is

B. 5

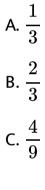
C.
$$\frac{1}{6}$$

D. $\frac{37}{7}$

Answer: C



15. Let
$$f(x)=\min\left(x+1,\sqrt{1-x}
ight)orall x\leq 1$$
. Then, the area
(in sq. units(bounded by $y=f(x),y=0$ and $x=0$ from
 $y=0$ to $x=1$ is equal to



D. 1

Answer: B



16. The solution of the differential equation $ydx - xdy + \ln xdx = 0$ is (where, C is an arbitrary constant)

A.
$$y = (\ln x)^2 + C$$

B. $y = (\ln x + 1) + C$
C. $y = -(\ln x + 1) + C$
D. $y = (\ln x)(x + C)$

Answer: D

Watch Video Solution

17. The perpendicular bisector of the line segment joining A(1, 4) and B(t, 3) has y - intercept equal to -4. Then, the product of all possible values of t is equal to

A. 1

B. 2

C. - 16

 $\mathsf{D.}-4$

Answer: C



18. Dice A has 4 red and 2 white faces whereas dice B has 3 red and 3 white faces. A coin is tossed once, if it falls head then the game continues by throwing the dice A and if it falls tail then the dice B is to be used. If red turns up at first 3 throws, then the probability that dice A is being used is

A.
$$\frac{7}{37}$$

B.
$$\frac{64}{91}$$

C. $\frac{9}{41}$
D. $\frac{27}{35}$

Answer: B

Watch Video Solution

19. If the normals at two points (x_1, y_1) and (x_2, y_2) of the parabola $y^2 = 4x$ meets again on the parabola, where $x_1 + x_2 = 8$ then $|y_1 - y_2|$ is equal to

A. $\sqrt{2}$

B. 3

C. 4

Answer: C

> Watch Video Solution

20. If the locus of the complex number z given by $arg(z+i)-arg(z-i)=rac{2\pi}{3}$ is an arc of a circle, then the

length of the arc is

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

B. $\frac{4\pi}{3\sqrt{3}}$
C. $\frac{2\sqrt{3}}{3}$
D. $\frac{2\pi}{3\sqrt{3}}$

Answer: B



21. The coefficient of the $(2m + 1)^{\text{th}}$ and $(4m + 5)^{\text{th}}$ terms in the expansion of $(1 + x)^{100}$ are equal, then the value of $\frac{m}{2}$ is equal to

Watch Video Solution

22. If the line $\frac{x-1}{2} = \frac{y-2}{3} = \frac{z-4}{4}$ intersect the xy and yz plane at points A and B respectively. If the volume of the tetrahedron OABC is V cubic units (where, O is the origin) and point C is (1, 0, 4), then the value of 102V is equal to

Watch Video Solution

23. The value of
$$\lim_{x \to 0} \frac{\sin^2 3x}{\sqrt{3 + \sec x - 2}}$$
 is equal to Watch Video Solution

24. If the acute formed between y - axis and the tangent drawn to the curve $y = x^2 + 4x - 17$ at the point $P\left(\frac{5}{2}, -\frac{3}{4}\right)$ is θ , the value of $\cot \theta$ is equal to

Watch Video Solution

25. Let C_1 be the graph of xy = 1 and the reflection of C_1 in the line y = 2x is C_2 . If the equation of C_2 is expressed as $12x^2 + bxy + cy^2 + d = 0$, then the value of (b + c + d) is equal to

