



MATHS

NTA MOCK TESTS ENGLISH

NTA JEE MOCK TEST 50

Mathematics

1. The coefficient of three consecutive terms in the expansion of $(1 + x)^k$. Are in the ratio 1:7:42 find the value of k. A. 49

B. 50

C. 55

D. 56

Answer: C



2. The sum of the divisors of 9600 is

A. 3048

B. 6120

C. 31620

D. 24384

Answer: C

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3. If the equation of the hypotenuse of a right angled isosceles triangle is 3x + 4y = 4 and its opposite vertex is (2, 2), then the equations of the perpendicular and the base are respectively

A.
$$7x + y = 16\&x - 7y + 12 = 0$$

B.
$$7x - y = 12\&x + 7y = 16$$

C.
$$5x + y = 12\&x - 5y + 8 = 0$$

D. x + 5y = 12&5x - y = 8

Answer: A

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4. The equation $k\cos x - 3\sin x = k+1$ is solvable only if

A.
$$k \in (-\infty,4)$$

B. $k \in (-\infty,4]$
C. $k \in (4,\infty)$
D. $k \in [4,\infty)$

Answer: B

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5. If
$$f(x) = \left\{ egin{array}{ccc} e^{2x^2 + x} & : & x > 0 \ ax + b & : & x \leq 0 \end{array}
ight.$$

is

differentiable at x = 0, then

A. a = 1, b = -1

B.
$$a = -1, b = 1$$

C.
$$a = 1, b = 1$$

D. a = -1, b = -1

Answer: C



6. The equation of the circle which passes through the point A(0, 5) and B(6, 1) and whose centre lies on the line 12x + 5y = 25 is

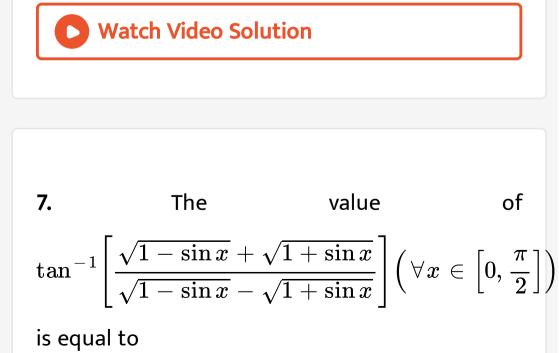
A.
$$3x^2 + 3y^2 + 10x + 6y + 15 = 0$$

B.
$$3x^2 + 3y^2 - 10x - 6y - 45 = 0$$

C.
$$x^2 + y^2 - 6x - 6y + 5 = 0$$

D.
$$x^2 + y^2 - 4x - 3y - 10 = 0$$

Answer: B



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

B. $\frac{x}{2} + \frac{\pi}{2}$
C. $\frac{x}{2} - \pi$
D. $\frac{\pi}{2} - \frac{x}{2}$

Answer: A



8. The negation of the statement "If I will become

famous then I will open a school" is

A.I will become rich and I will not open a

school

B. Either I will not become rich or I will not

open a school.

- C. Neither I will become rich nor I will open a school.
- D. I will not become rich or I will open a school.

Answer: A



9. Let a continous and differentiable function f(x) is such that f(x) and $\frac{d}{dx}f(x)$ have opposite signs everywhere. Then,

A. f'(x) is always increasing

B. f(x) is always increasing

C. |f(x)| is non - decreasing

D. |f(x)| is decreasing

Answer: D



10. The value of
$$\int \frac{1}{(2x-1)\sqrt{x^2-x}} dx$$
 is equal

to (where c is the constant of integration)

A.
$$\sec^{-1}(x-1)+c$$

B.
$$\sec^{-1}(2x-1)+c$$

C.
$$an^{-1}x + c$$

D.
$$an^{-1}(2x-1)+c$$

Answer: B

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11. Find the equation of the tangent to the parabola $y^2 = 4x + 5$ which is parallel to the straight line y = 2x + 7

A.
$$y = 2x$$

B.
$$y = 2x - 3$$

$$\mathsf{C}.\, y = 2x + 3$$

D.
$$y=2x+5$$

Answer: C



12. The area of the smaller part of the circle $x^2+y^2=2$ cut off by the line x=1 is

A.
$$\frac{\pi}{2}$$
 sq. units
B. $\left(\frac{\pi}{2} - 1\right)$ sq. units
C. $\left(\frac{\pi}{2} + 1\right)$ sq. units
D. $\left(\frac{\pi}{2} - \frac{1}{2}\right)$ sq. units

Answer: B

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13. If a and b are arbitrary constants, then the order and degree of the differential equation of the family of curves $ax^2 + by^2 = 2$ respectively are

- A. 2, 2
- B. 1, 2
- C. 1, 1
- D. 2, 1

Answer: D



14. \overrightarrow{a} , \overrightarrow{b} and \overrightarrow{c} are unimodular and coplanar. A unit vector \overrightarrow{d} is perpendicualt to them , $\left(\overrightarrow{a} \times \overrightarrow{b}\right) \times \left(\overrightarrow{c} \times \overrightarrow{d}\right) = \frac{1}{6}\hat{i} - \frac{1}{3}\hat{j} + \frac{1}{3}\hat{k}$, and the angle between \overrightarrow{a} and $\overrightarrow{b}is30^{\circ}$ then \overrightarrow{c} is

 $\begin{array}{l} \text{A.} \ \frac{1}{3} \hat{i} - \frac{2}{3} \hat{j} + \frac{2}{3} \hat{k} \\\\ \text{B.} \ \frac{2}{7} \hat{i} - \frac{3}{7} \hat{j} + \frac{6}{7} \hat{k} \\\\ \text{C.} \ 3 \hat{i} - 4 \hat{j} + 12 \hat{k} \\\\ \text{D.} \ \frac{1}{\sqrt{3}} \hat{i} - \frac{1}{\sqrt{3}} \hat{j} + \frac{1}{\sqrt{3}} \hat{k} \end{array}$

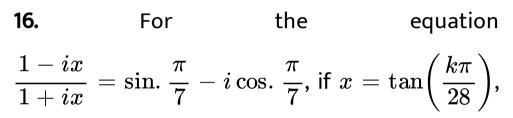
Answer: A



15. Direction cosines to the normal to the plane containing the lines $\frac{x}{2} = \frac{y}{3} = \frac{z}{5}$ and $\frac{x-1}{2} = \frac{y-1}{3} = \frac{z-1}{5}$ are A. $\frac{2}{\sqrt{14}}, \frac{-3}{\sqrt{14}}, \frac{5}{\sqrt{14}}$ B. $\frac{2}{\sqrt{14}}, \frac{-3}{\sqrt{14}}, \frac{1}{\sqrt{14}}$ C. $\frac{2}{\sqrt{14}}, \frac{-1}{\sqrt{14}}, \frac{1}{\sqrt{14}}$ D. $\frac{3}{\sqrt{13}}, \frac{-2}{\sqrt{13}}, 1$

Answer: B





then the value of k can be (where $i^2=\ -1$)

A. 1

B. 3

C. 5

D. 9

Answer: C



17. Shubham has 75% chance of attending the annual meet. Shikha has a 90% chance if Shubham also attends otherwise she has a 40%chance of attending the meet. If I go to the annual meet and see Shikha there, then the probability the Shubam is also there, is

A.
$$\frac{27}{31}$$

B. $\frac{19}{30}$

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

D. $\frac{9}{10}$

Answer: A



18. Let A and B be two matrices such that the order of A is 5×7 . If $A^T B$ and BA^T are both defined, then (where A^T is the transpose of matrix A)

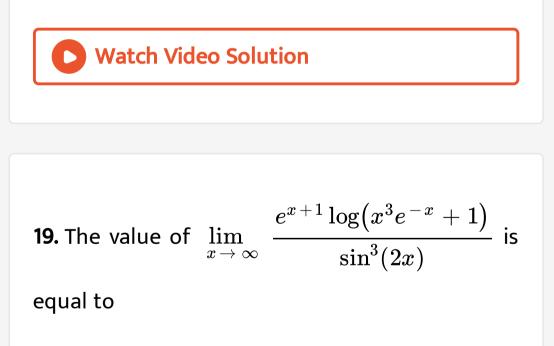
A. order of B^T is 5 imes 7

B. order of B^TA is 7 imes 7

C. order of B^TA is 5 imes 5

D. $B^T A$ is undefined

Answer: B



(Use e = 2.7)

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20. Find the angle between the pair of tangents from the point (1,2) to the ellipse $3x^2 + 2y^2 = 5.$

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21. The mean and variance of 5 observations are 6 and 6.8 respectively. If a number equal to mean is included in the set of observations is k, then the value of $\frac{34}{k}$ is equal to

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