2023-April-10 Shift-1

AI24BTECH11005 - Prajwal Naik

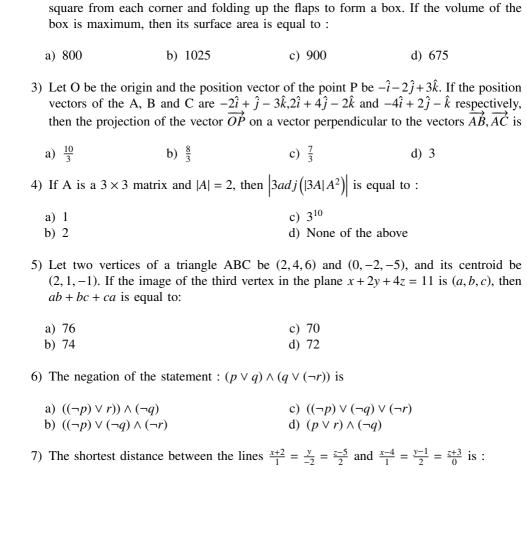
1) An arc PQ of a circle subtends a right angle at the centre O. The midpoint of the arcPq is R.If $\overrightarrow{OP} = \overrightarrow{u}$ and $\overrightarrow{OR} = \overrightarrow{v}$ and $\overrightarrow{OQ} = \alpha \overrightarrow{u} + \beta \overrightarrow{v}$, then α, β^2 are the roots of the

2) A square piece of tin of side 30 cm is to be made into a box without top by cutting a

c) $x^2 - x - 2 = 0$ d) $x^2 + x - 2 = 0$

equation:

a) $3x^2 - 2x - 1 = 0$ b) $3x^2 + 2x - 1 = 0$



AB in the ratio 2:3, is a circle of radius:			
a) $\frac{2}{3}\lambda$ b) $\frac{\sqrt{19}}{7}\lambda$		c) $\frac{3}{5}\lambda$ d) $\frac{\sqrt{19}}{5}\lambda$	
10) For the system of linear equations $2x - y + 3z = 5$ $3x + 2y - z = 7$ $4x + 5y + \alpha z = \beta$ Which of the following is not correct?			
a) The system is inconsistent for $\alpha=-5$, c) The system has a unique solution for $\beta=8$ $\alpha=-5, \beta=8$ b) The system has infinitely many solutions for $\alpha=-6, \beta=9$ d) The system has infinitely many solutions for $\alpha=-5, \beta=8$			
11) Let the first term a and the common ratio r of a geometric progression be positive integers. If the sum of squares of its first three is 33033, then the sum of these terms is equal to :			
a) 210	b) 220	c) 231	d) 241
12) Let P be the point of intersection of the line $\frac{x+3}{3} = \frac{y+2}{1} = \frac{z-1}{-2}$ and the plane $x+y+z=2$. If the distance of the point P from the plane $3x-4y+12z=32$ is q, then q and 2q are the roots of the equation:			
a) $x^2 + 18x - 72 = 0$ b) $x^2 + 18x + 72 = 0$ c) $x^2 - 18x - 72 = 0$ d) $x^2 - 18x + 72 = 0$			
13) Let f be a differentiable function such that $x^2 f(x) - x = 4 \int_0^4 t f(t) dt$. $f(1) = \frac{2}{3}$. Then 18f(3) is equal to :			
a) 180	b) 150	c) 210	d) 160
14) Let N denote the sum of the numbers obtained when two dice are rolled. If the probability that $2^{N!} < N!$ is $\frac{m}{n}$. Where $(m, n) = 1$, then $4m - 3n$ equal to:			

c) 6

d) 9

c) 11d) 33

8) If the coefficient of x^7 in $\left(ax - \frac{1}{bx^2}\right)^{13}$ and the coefficient of x^{-5} in $\left(ax + \frac{1}{bx^2}\right)^{13}$ are equal, then a^3b^4 is equal to :

9) A line segment AB of length λ moves such that the points A and B remain on the periphery of a circle of radius λ . The locus of the point, that divides the line segment

a) 8

b) 7

a) 22

b) 44

- a) 180
- b) 150
- c) 210

d) 160

15) If $I(x) = \int_{e}^{\sin x^2} (\cos x \sin 2x - \sin x) dx$ and I(0) = 1, then $I(\frac{\pi}{3})$ is equal to :

- a) $e^{\frac{3}{4}}$
- b) $-e^{\frac{3}{4}}$
- c) $\frac{1}{2}e^{\frac{3}{4}}$
- d) $-\frac{1}{2}e^{\frac{3}{4}}$