JEE-Advanced-27-01-2024 (Memory Based) [Morning Shift]

Maths

Question: The points on the line in the first quadrant 4x+5y=20 which trisect the section of the line in the first quadrant, what is the tan of the angle between them?
Options:
(a) 25/41
(b) 3/5
(c) 4/5
(d) 30/41
Answer: (d)

Question: S={1, 2,.....10}

M are all the subsets of S
X={A, B ; A intersection B= null set and A, B belongs to X}
Options:
(a) X is symmetric
(b) X is transitive and symmetric
(c) X is reflexive
(d) X is symmetric and reflexive

Answer: (a)

Question:

$$8\frac{1}{4} = (3+P)+\frac{1}{4}\cdot 2\,(3+2p)+\frac{1}{4}\cdot 3\,(3+3p)+....$$

Value of P??

Answer: 9

$$8 = \frac{3}{4}(3+P)\ +\ \frac{1+2}{4}(3+2P)+3(3+3P)+$$

$$8\times\frac{y}{4}=\frac{1\times 3}{-}\ +\ \frac{1+2}{y_1}\times(3+P)+\frac{1}{y_3}(3+2P)+...$$

$$6 = \frac{1}{4}+\ -(P)+\frac{1}{y}\cdot 2\,(P)+\frac{1}{y_3}(P)+...$$

$$3 = 11 = \frac{P/4}{-\frac{1}{4}}\ =\ \frac{P}{3}\ \rightarrow P=9$$

Question: Find the length of the chord of the ellipse
$$\frac{x^2}{25}+\frac{y^2}{16}=1 \text{ whose midpoint is } \left(1,\frac{2}{5}\right)$$

Answer: $\dfrac{\sqrt{1691}}{10}$

Question:

$a.c = 3$

$a = -2j+k \quad b=3(k \times c) \quad a$

$(a \times b) \quad = a.c$

$a.b$

Find

Answer: 42

Question: Circle passing through (0,0), (0,1), (1,0) and(2k, 3k). Find the value of k

Answer:

$K = \dfrac{5}{13}$ as $K \neq 0$

Question:

$\displaystyle\int_{0}^{1}\dfrac{1}{\sqrt{3+x}\ +\sqrt[4]{1+x}}dx = a+b\sqrt{2}+c\sqrt{3}$,

then 2a- 3b - 4c is equal to

Options:
(a) 10
(b) 0
(c) 12
(d) 20

Answer: 12

Question: AP1 : 4, 9, 14 .... Upto 25 terms
AP₂ 3, 6, 9 .... Upto 37 terms
No. of common terms
Answer: 7

Question: $a_1, a_2,....,a_{10}$

$\displaystyle\sum a_i = 50 \quad \sum_{i<i} a_i a_j = 1100$ Find $S.D$

Answer: $\sqrt{5}$

Question: $\displaystyle\lim_{x \to 0}\dfrac{\sqrt{1+\sqrt{1+x^4}}-\sqrt{2}}{x^4} = a$

Answer: 32

Question: These least positive integral value of 'a' such that the vectors ai -2j +2k and ai+ 2aj -2k are having acute angle between them
Answer: 5

Question:

$$f(x) = \begin{bmatrix} \cos x & -\sin x & 0 \\ \sin x & \cos x & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

$S_1 \Rightarrow f(x)f(y) = f(x+y)$

$S_2 \Rightarrow f(-x)$ is inverse of $f(x)$

Answer: S1 and S2 both are true.

Question: If $f(x) = x^3 + x^2 f'(1) + x f''(2) + f'''(3)$, then find $f'(10)$.
Answer: 202