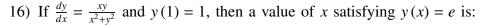
ASSIGNMENT 1

EE24BTECH11011 - PRANAY



a) $\sqrt{3}e$

c) $\sqrt{2}e$

b) $\frac{1}{2} \sqrt{3}e$

d) $\frac{e}{\sqrt{2}}$

17) If one end of focal chord AB of the parabola $y^2 = 8x$ is at $A(\frac{1}{2}, -2)$, then the equation of the tangent at B is:

a) x + 2y + 8 = 0

c) x - 2y + 8 = 0

b) 2x - y - 24 = 0

d) 2x + y - 24 = 0

18) Let a_n be the n^{th} term of a G.P. of positive terms. If $\sum_{n=1}^{100} a_{2n+1} = 200$ and $\sum_{n=1}^{100} a_{2n} = 100$, then $\sum_{n=1}^{200} a_n$ is equal to:

a) 300

c) 225

b) 175

d) 150

19) A random variable X has the following probability distribution. Then P(X > 2) is:

X	1	2	3	4	5
P(<i>X</i>)	K^2	2 <i>K</i>	K	2 <i>K</i>	$5K^2$

a) $\frac{7}{12}$

c) $\frac{1}{36}$

b) $\frac{23}{26}$

d) $\frac{1}{6}$

20) If $\int \frac{d\theta}{\cos^2\theta(\tan 2\theta + \sec 2\theta)} = \lambda \tan \theta + 2\log_e|f(\theta)| + C$, where C is the constant of integration, then the ordered point $(\lambda, f(\theta))$ is:

a) $(-1, 1 - \tan \theta)$

c) $(1, 1 + \tan \theta)$

b) $(-1, 1 + \tan \theta)$

d) $(1, 1 - \tan \theta)$

21) Let **a**, **b**, and **c** be three vectors such that $|\overrightarrow{a}| = 3$, $|\overrightarrow{b}| = 5$, $|\overrightarrow{a} \cdot \overrightarrow{b}| = 10$ and the angle between $|\overrightarrow{b}|$ and $|\overrightarrow{c}|$ is $\frac{\pi}{3}$. If $|\overrightarrow{a}|$ is perpendicular to vector $|\overrightarrow{b}| \times |\overrightarrow{c}|$, then $||\overrightarrow{a}| \times (|\overrightarrow{b}| \times |\overrightarrow{c}|)|$ is equal to _____

22) If $C_r = {}^{25}C_r$ and $C_0 + 5 \cdot C_1 + 9 \cdot C_2 + \cdots + 101 \cdot C_{25} = 2^{25} \cdot k$ then k is equal to _____

- 23) If the curves $x^2 6x + y^2 + 8 = 0$ and $x^2 8y + y^2 + 16 k = 0$, (k > 0) touch each other at a point, then the largest value of k is _____
- 24) The number of terms common to the A.P.'s 3, 7, 11, ..., 407 and 2, 9, 16, ..., 709 is _____
- 25) If the distance between the plane, 23x 10y 2z + 48 = 0 and the plane containing the lines $\frac{x+1}{2} = \frac{y-3}{4} = \frac{z+1}{3}$ and $\frac{x+3}{2} = \frac{y+2}{6} = \frac{z-1}{\lambda}$, $(\lambda \in R)$ is equal to $\frac{k}{\sqrt{633}}$ the k is equal to _____