Assignment 1

EE24Btech11024 - G. Abhimanyu Koushik

(1,0)

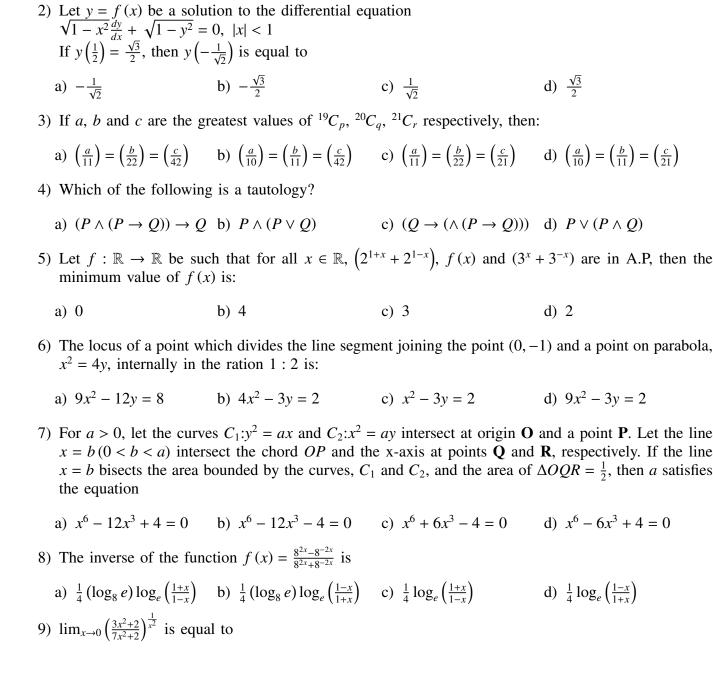
d) (4,3)

1) For which of the following ordered pairs (μ, δ) the system of linear equations

b) (3,4)

x + 2y + 3z = 1 $3x + 4y + 5z = \mu$ $4x + 4y + 4z = \delta$ is inconsistent?

a) (4,6)



a) <i>e</i>	b) $\frac{1}{e^2}$	c) $\frac{1}{e}$	d) e^2
10) Let $f(x) = \left(\sin\left(\tan^{-1} x\right) + \sin\left(\cot^{-1} x\right)\right)^2 - 1$ where $ x > 1$. If $\frac{dy}{dx} = \frac{1}{2} \frac{d}{dx} \left(\sin^{-1} f(x)\right)$ and $y\left(\sqrt{3}\right) = \frac{\pi}{6}$, then $y\left(-\sqrt{3}\right)$ is equal to:			
a) $\frac{\pi}{3}$	b) $\frac{2\pi}{3}$	c) $-\frac{\pi}{6}$	d) $\frac{5\pi}{6}$
11) If the equation, $x^2 + bx + 45 = 0$ ($b \in \mathbb{R}$) has conjugate complex roots and they satisfy $ z + 1 = 2\sqrt{10}$, then:			
a) $b^2 + b = 12$	b) $b^2 - b = 42$	c) $b^2 - b = 30$	d) $b^2 + b = 72$
12) The mean and standard deviation of 10 observations are 20 and 2 respectively. Each of these 10 observations is multiplied by p and then reduced by q , where $p \neq 0$ and $q \neq 0$. If the new mean and standard deviation become half of their original values, then q is equal to:			
a) -20	b) -5	c) 10	d) -10
13) If $\int \frac{\cos x}{\sin^3 x \left(1+\sin^6 x\right)^{\frac{2}{3}}} dx = f(x) \left(1+\sin^6 x\right)^{\frac{1}{4}} + c$, where c is a constant of integration, then $\lambda f\left(\frac{\pi}{3}\right)$ is equal to:			
a) $-\frac{9}{8}$	b) $\frac{9}{8}$	c) 2	d) -2
14) Let A and B be two independent events such that $P(A) = \frac{1}{3}$ and $P(B) = \frac{1}{6}$. Then which of the following is TRUE ?			
a) $P\left(\frac{A}{A \cup B}\right) = \frac{1}{4}$	b) $P\left(\frac{A}{B'}\right) = \frac{1}{3}$	c) $P\left(\frac{A}{B}\right) = \frac{2}{3}$	d) $P\left(\frac{A'}{B'}\right) = \frac{1}{3}$
15) If volume of a parallelepiped whose coterminous edges are given by $\overrightarrow{u} = \hat{i} + \hat{j} + \lambda \hat{k}$, $\overrightarrow{v} = \hat{i} + \hat{j} + 3\hat{k}$ and $\overrightarrow{w} = 2\hat{i} + \hat{j} + \hat{k}$ be 1cu.unit. If θ is the angle between the edges \overrightarrow{u} and \overrightarrow{w} then, $\cos \theta$ will be:			

c) $\frac{7}{6\sqrt{3}}$

d) $\frac{5}{3\sqrt{3}}$

a) $\frac{7}{6\sqrt{6}}$

b) $\frac{5}{7}$