Assignment 2

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Sub- DTL assignment 2 Academic year- 2022-23

College of Engineeering Pune
Department of Mathematics
Tutorial on Unit 3

Q.1) Solve the following:-
a)$f(x) = y^2 + xlogx$
b)$f(x) = y^2 + xlog_a + \sin(2x)$

Q.2) Solve the following:-

1. $\begin{bmatrix} 2 & 3 & 1 \\ 1 & 3 & 5 \\ 5 & 4 & 7 \end{bmatrix} + \begin{bmatrix} 1 & 3 & 5 \\ 4 & 5 & 8 \end{bmatrix}$

2)Y=$\begin{pmatrix} a_{11} & a_{12} & a_{13} & \cdots \\ b_{11} & b_{22} & b_{23} & \cdots \\ \vdots & \vdots & \vdots & \ddots \end{pmatrix}$

3)a=$\int_0^\infty (Ax^2 + Bz)$, b=$\iint_0^\infty (Bx^2 + Cy)$, c=$\iiint_0^\infty (Cy^2 + Az)$

4)Prove the Faraday Laws of Induction

5) Let there be A and B such that:-

$$A = \{x \in R \mid 3 < x < 5\} \text{ , } B = \{x \in R \mid 4 < x < 9\}$$

Find 1)$A \subset B$, $A \subseteq B$, $A \cup B$

Q.3)Test the convergence of function

a) $f(x) = x^2 + 5x - c$

b) $\sum_{n=1}^{\infty}(1 - \frac{3}{n})^n$

(1) Which of the following sequences converges and which diverge?Find the limit of each convergent sequence and justify your answers.

$$(a)a_n = (-1)^n(1 - \frac{1}{n}) \qquad (e)a_n = \frac{lnn}{n^{\frac{1}{n}}} \qquad (j)a_n = (n+4)^{\frac{1}{n+4}}$$