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Assignment (Marks 50)

TDC 3rd Sem, 2021 (Non CBCS)

Paper 3.1 (Elementary Mathematics for Economics)

Assignment 1 (Marks - 25)

(a) State and prove the product rule of differentiation. 2+4=6

(b) If $y = \log(ax^2+bx+c)$, find $\frac{dy}{dx}$. 4

(c) If $y = \frac{2x+5}{x^2-3}$, find $\frac{dy}{dx}$ using quotient rule of differentiation. 5

(d) Find $\frac{\partial y}{\partial x_1}$ and $\frac{\partial y}{\partial x_2}$ of the function 5

$$y = x_1^3 + 2x_1x_2^2 - 3x_2^2$$

(e) Evaluate: $\int_1^2 (x^2 - 2x + 10)\,dx$ 5

Assignment 2: (marks - 25)

(a) In a three-sector economy, the input co-efficient matrix and final demand vector are as given below:

$$A = \begin{bmatrix} 0.3 & 0.2 & 0.3 \\ 0.1 & 0.3 & 0.4 \\ 0.2 & 0.3 & 0 \end{bmatrix} \quad \text{and} \quad F = \begin{bmatrix} 500 \\ 700 \\ 600 \end{bmatrix}$$

Find the sectoral outputs x_1, x_2 and x_3 using Cramer's Rule. 10

(b) Write a note on the limitations and significance of static input-output model.

5 + 5 = 10

(c) Find the inverse of

$$A = \begin{bmatrix} 4 & 0 & 1 \\ 3 & 2 & 1 \\ 1 & 5 & 2 \end{bmatrix}$$

5

End