

Home Assignment (Series - 1)
B.A. 1st Semester (Honours)
Paper: ECO-HC-1026: Mathematical Methods
for Economics I
Session: 2022 - 2023

1. Find $\frac{dy}{dx}$ of the following functions:

4x6 = 24

(a) $y = \frac{x^3}{7} - e^{3x} + \log x - \sqrt{x}$

(b) $y = \frac{5}{2x^2} + \frac{8}{7e^{3x}} + \frac{2}{\sqrt{x}}$

(c) $y = \log x \times (10 + e^x)$

(d) $y = (7x^2 - 5x + 3)(x^2 - 3)$

(e) $y = \frac{a + bx + cx^2}{x - px^2}$

(f) $y = \frac{50 - 5x + 4x^2}{2x^3 - 5x}$

2. The total cost function of a firm is given as $c = 100 - 15q + 5q^2$

(a) Find the level of output at which the slope of the average cost curve is zero.

(b) Find the level of output at which the marginal cost curve cuts average cost curve.

(c) Find the level of output at which the slope of the average variable cost curve is zero.

3. If demand and output functions are given by

$p = 10 + 2q$ and $q = 2l + 3l^2$

respectively, where p is the price, q is the quantity and l is the labour employment. Find out marginal revenue product of labour (MRP_l).