Suggested Homework for Lecture 8
Math 116

(1) Find the indicated function based on the given information.

    (1a) If cost is given by $\frac{x^2}{100} + \frac{x}{10} + 50$, find the marginal cost function.

    (1b) If price/demand is given by $100 - \frac{x^2}{10}$, find the revenue function.

    (1c) If price/demand is given by $500 - x - x^2$, find the marginal revenue function.

    (1d) If cost is given by $50 + \sqrt{x}$, find the marginal cost function.

    (1e) If price/demand is given by $250 - 2x$, find the marginal revenue function.

(2) In each of the following problems, a cost and price/demand function for a particular firm are given. Find the profit-maximizing level of production.

    (2a) $C(x) = \frac{x^2}{2} + 50x + 100$, $P(x) = 100 - \frac{x}{2}$

    (2b) $C(x) = 1000 + 400x + x^2$, $P(x) = 1000 - 2x$

    (2c) $C(x) = x^2 + 50$, $P(x) = 150 - \frac{x}{2}$

(3) In each of the following problems, marginal cost and marginal revenue for a particular firm are given. Find the profit-maximizing level of production.

    (3a) $C'(x) = 100 + 10x$, $R'(x) = 1000 - 20x$

    (3b) $C'(x) = x + 50$, $R'(x) = 200 - x$

    (3c) $C'(x) = 2x$, $R'(x) = 100 - 2x$

Answers to Suggested Homework for Lecture 8
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(1a) $\frac{x}{50} + \frac{1}{10}$

(1b) $100x - \frac{x^3}{10}$

(1c) $500 - 2x - 3x^2$

(1d) $\frac{1}{2\sqrt{x}}$

(1e) $250 - 4x$

(2a) 25

(2b) 100

(2c) 50

(3a) 30

(3b) 75

(3c) 25