

Chapter 4 - Applications of the derivative 2

Word problems (Marginality)

q – quantity of the good

Variable Cost - Cost that changes with quantity produced

Fixed Cost – Cost independent of quantity

Total cost $C(q) = \text{Variable Cost} * q + \text{Fixed Cost}$

- (a) Fixed costs are \$10000; variable costs are \$3q per item. Write a formula for total cost, C (in dollars), as a function of quantity q .

$$C(q) = \underline{\hspace{4cm}}$$

Revenue $R(q) = \text{Price} * q$

- (b) The item in part (a) is sold for \$450 each. Write a formula for revenue, R (in dollars), as a function of q .

$$R(q) = \underline{\hspace{4cm}}$$

Profit $P(q) = \text{Revenue} - \text{Total Cost}$

- (c) Write a formula for the profit function, $P(q)$ (in dollars), for this item.

$$P(q) = \underline{\hspace{4cm}}$$

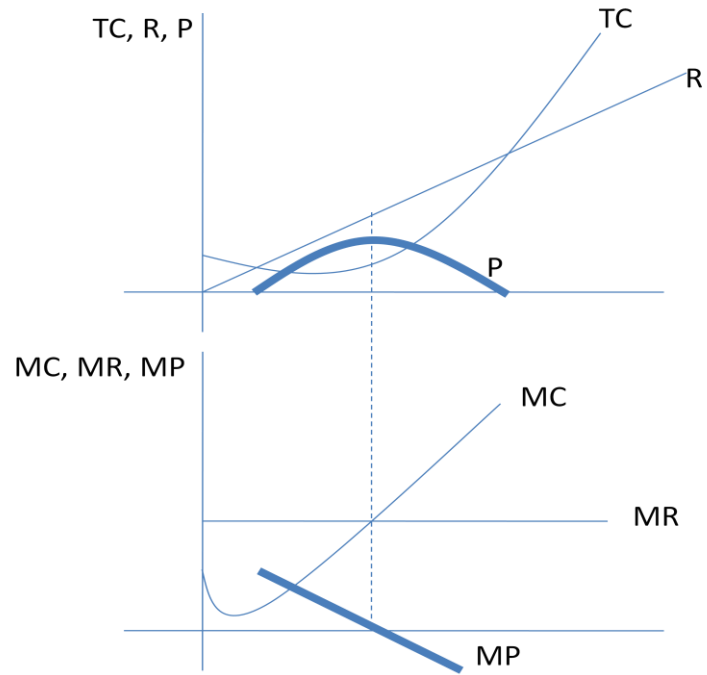
Marginal Revenue $R'(q) = \underline{\hspace{4cm}}$

Marginal Cost $C'(q) = \underline{\hspace{4cm}}$

Marginal Profit $P'(q) = \underline{\hspace{4cm}}$

Total Cost, Revenue and Profit

Marginal Cost, Marginal Revenue, Marginal Profit



For the example above, find the quantity that maximizes profit.

What is the maximum profit?