

Math 220 - Calculus f. Business and Management - Worksheet 19

Worksheet 19 - Marginal Economic Values

Marginal cost, revenue and profit

Exercise 1: The cost for rent, machinery etc is \$50,000 per year to make a product. Raw material and labor for the product costs \$4.00 per item. Write an equation for cost as a function of the number of items produced. Then write the marginal cost function. Estimate the cost increase by going from 100 units to 101 units. You should see that the estimate is equal to the actual cost increase. Can you explain why?

Exercise 2: The demand function for a product is $x = 1500 - 1.5p$ where x is the quantity produced and p is the price charged for the item. The cost function is $C(x) = 200x + 25000$.

a) Write cost, revenue and profit as a function of price. Hints: Cost will be a composite function, revenue is quantity times price and profit is revenue minus cost.

b) Find the functions for marginal cost, revenue and profit.

Exercise 3: For this problem, the demand function is $X(p) = 6,000 - 10p$ and cost as a function of demand is $500 + 4x$.

a) Write cost, revenue and profit as functions $C(p)$, $R(p)$, $P(p)$ of price.

b) Find the functions for marginal cost, revenue and profit (depending on price).

c) Estimate how much the profit will change if the price is \$200.00 and is increased by \$1.00. What if the price is \$400.00 and the price is increased by \$1.00?

d) At what prices is the profit increasing (marginal profit > 0)? decreasing?

e) Based on c and d, what do you think the price should be set at? How much profit will be made at this point (use your calculator)?