1.6: Applications of Functions in Business and Economics

Math 111

Objective:

1. Supply, demand and market equilibrium
2. Monopoly market

***1. Supply, Demand and Market Equilibrium***

**Market equilibrium** occurs when the quantity of a commodity demanded is equal to the quantity supplied.

Do you think there is a relationship between demand and price? If so what is it?

Do you think there is a relationship between supply and price? If so what is it?

If the supply and demand curves for a commodity are graphed on the same coordinate system, with the same units, market equilibrium occurs at the point where the curves intersect. The price at that point is the **equilibrium price**, and the quantity at that point is the **equilibrium quantity**.

Ex1: Find the market equilibrium for the following supply and demand functions. Explain what it means in everyday language.

Demand: 

Supply: 

Ex2: Find the market equilibrium for the following supply and demand functions. Explain what it means in everyday language.

Demand: 

Supply: 

***1I. Revenue, Cost, Profit, and Breakeven Analysis***

What is Revenue (in a business context)?

What is Cost (in a business context) and what are its two components?

What is Profit?

Ex3: A manufacturer has fixed costs of $3300 and a variable cost of $5 per item produced.

1. Define your variables
2. What is the cost function?
3. What is the cost if no items are produced?

Ex4: Heavenly Cappucino has costs of $3000/mo if they make and sell 1000 drinks and $4200/mo if they produce 2000 drinks. Assuming the costs vary in a linear manner:

1. Define your variables
2. Find and interpret the slope.
3. Find and interpret the *C*-intercept
4. Find an equation to model the costs.
5. Find and interpret the *n*-intercept

Ex5: The cost function for Heavenly Cappuccino was found in the previous example. If the average drink sells for $3.50, how many drinks must they sell to breakeven?

Ex6: Suppose the manufacturer from example 3 has revenue of .

1. Find the profit function.
2. Find and interpret 
3. What is the profit on 351 items?
4. How many items must be sold to breakeven?

Ex7: The bookstore’s quarterly costs are given by . If they wish to breakeven after selling only 200 texts, what must be the price of the average textbook?