

Final Exam Review – Unit 4

Name: KEY

Date: _____

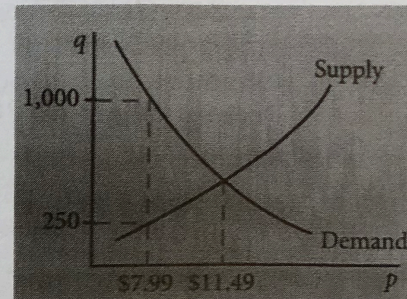
1. The graph below shows supply and demand curves for the newest game controller for a video game system.

a) What is the equilibrium price?

$\$11.49$

b) Describe what happens at this equilibrium price.

SUPPLY = DEMAND



c) What will happen if the price is set at \$7.99?

TOO MUCH DEMAND, NOT ENOUGH SUPPLY
(DEFICIT)

d) How many game controllers are supplied at a price of \$7.99?

250

e) What will happen if the price is set at \$12.99?

TOO MUCH SUPPLY, NOT ENOUGH DEMAND
(SURPLUS)

2. The demand function for a certain product is $q = -300p + 10,000$. The fixed expenses are \$500,000 and the variable expenses are \$2 per item produced.

a) What is the expense function?

$$E = 500,000 + 2q$$

b) If the price is set at \$20, what quantity will be demanded?

$$q = -300p + 10,000$$

$$q = -300(20) + 10,000 \rightarrow q = -6,000 + 10,000$$

$$q = 4,000$$

c) If $q = 1,000$ widgets, find E , the cost (expense) of producing them.

$$E = 500,000 + 2(1,000)$$

$$E = 500,000 + 2,000$$

$$E = 502,000$$

3. At a particular company, the monthly expense equation is $E = 50q + 40$. Its products will be sold to retailers at a wholesale price of \$60 each. How many items must be sold to reach the breakeven point?

$$60q = 50q + 40$$

$$10q = 40$$

$$q = 4$$

4. Let the expense function for a particular item be $E = -19.50p + 530$. Let the revenue function be $R = -4.5p^2 + 100p$. Use the quadratic formula to determine the breakeven points.

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$E = R$$

$$-19.50p + 530 = -4.5p^2 + 100p$$

$$0 = -4.5p^2 + 119.50p - 530$$

$$a = -4.5 \quad b = 119.50 \quad c = -530$$

$$x = \frac{-119.50 \pm \sqrt{119.50^2 - (4 * -4.5 * -530)}}{2 * -4.5}$$

X =

$$2 * -4.5$$

$$X = \frac{-119.5 \pm \sqrt{14280.25 - 9540}}{-9}$$

$$X = \frac{-119.5 \pm \sqrt{4740.25}}{9}$$

$$X = \frac{-119.5 \pm 68.85}{9}$$

$$X = \frac{-50.65}{9}$$

$$X = \frac{-188.35}{9}$$

$$X = -5.63$$

$$X = -20.93$$

5. Determine the expense E for a production if $E = 82q + 850$, $p = \$32$, and $q = 24p + 705$.

$$q = 24(32) + 705$$

$$q = 768 + 705$$

$$q = 1473$$

$$E = 82(1473) + 850$$

$$E = 120,786 + 850$$

$$E = 121,636$$