

MBA Maths

Practice Quiz 4 2009

Question 1

(a) The quantity demanded Q is a linear function of price. When price $P=0$ the demand is 80. When price $P=40$ the demand is zero. Give an equation for the quantity Q in terms of price P you should have Q on the left and an expression of the form $b+mP$ on the right

(b) The quantity supplied S is zero if the price is less or equal to than the unit cost of \$1.10. For every extra 30 cents above this, the quantity supplied rises by 1.8 units. Give an equation for the quantity supplied S in terms of price P . You should have S on the left and an expression of the form $b+mP$ on the right.

Question 2

Sketch the following functions

a. $-2x^2+2x+4$

b. $2x^2+6x+5$

c. $4x-1-4x^2$

On each graph indicate the following

- (i) The point/s at which the function crosses the x-axis
- (ii) The point at which the function crosses the y-axis.
- (iii) The value of x which minimizes or maximizes the function.
- (iv) The minimum/maximum value of the function

Question 3

Suppose you are given the following information about the monthly demand for widgets.

- If the price is \$0, the demand for widgets will be 115,000 units per month. For every increase in price of \$3, the monthly demand will decrease by 15,000 units.
 - Fixed costs are \$100,000 per month and variable costs are \$2 per unit sold.
- (i) Write down the cost **C** of widgets as a function of demand **Q**.
 - (ii) Write down the demand **Q** for widgets as a function of price **P**.
 - (iii) If revenue, **R** is given by $R=PQ$, write down revenue as a function of price.
 - (iv) Using your answers to (i) and (ii), write down cost, **C**, as a function of price, **P**.
 - (v) If profit, **Pr**, is given by $Pr=R-C$, and write down an expression for profit as a function of price.
 - (vi) Graph **Pr** vs **P** On your sketch you should indicate
 - a. The prices at which revenue=0
 - b. The price which maximizes revenue
 - c. The value of revenue at this price.