

MA 162 Recitation Worksheet Thursday 4th September 2014

Please attempt as many of the questions as you have time.

1. The management of TMI finds that the monthly fixed costs attributable to the production of their 100-watt light bulbs is \$12,100.00. If the cost of producing each twin-pack of light bulbs is \$.60 and each twin pack sells \$1.15, find the company's cost function, revenue function, and profit function.
2. Suppose an asset has an original value of $\$C$ and is depreciated linearly over N years with a scrap value of $\$S$. Determine the asset's book value, $V(t)$, as a function of time.
3. At a unit price of \$55, the quantity demanded of a certain commodity is 1000 units. At a unit price of \$85, the demand drops to 600 units. Given that it is linear, find the demand equation. above what price will there be no demand? What quantity would be demanded if the commodity were free.
4. A division of the Gibson Corporation manufactures bicycle pumps. Each pump sells for \$9, and the variable cost producing each unit is %40 of the selling price. The monthly fixed costs incurred by the division are \$50,000. What is the break even point for the division.
5. A product may be made using Machine I or Machine II. The manufacturer estimates that the monthly fixed costs of using machine I are \$18,000, whereas the monthly fixed costs of using machine II are \$15,000. The variable costs of manufacturing 1 unit of the product using Machine I and Machine II are \$15 and \$20 respectively. The product sells for \$50 each.
 - a) Find the cost functions associated with using each machine
 - b) Which machine should management choose in order to maximize profits if the projected sales are 450 units? 550 units? 650 units?
 - c) what is the profit for each case in part b)
6. Suppose the demand and supply equations for a certain commodity are given by $p = ax + b$ and $p = cx + d$ respectively, where $a < 0, c > 0$ and $b > d > 0$
 - a) Find the equilibrium quantity and equilibrium price in terms of a, b, c, d
 - b) Use part a) to determine what happens to the market equilibrium if c is increased while $a, b,$ and d remain fixed. Interpret your answer in economic terms.