

Section 1.4

Applications of Functions to Economics

1. A company that makes Adirondack chairs has fixed costs of \$5000 and variable costs of \$30 per chair. The company sells the chairs for \$50 each.
 - a. Find the formulas for the cost and revenue functions.
 - b. Find the marginal cost and marginal revenue.
 - c. Graph the cost and revenue functions on the same axes.
 - d. Find the break-even point.

2. Let $D(p) = 100 - 2p$ be the demand curve and $S(p) = 3p - 50$ be the supply curve. We can calculate that the equilibrium price is \$30 and the equilibrium quantity is 40 units. Suppose that a sales tax of 5% is imposed on the consumer, so that the consumer pays $p + 0.05p$, while the supplier's price is p .
 - a. Find the new equilibrium price and quantity.
 - b. How much is paid in taxes on each unit? How much of this is paid by the consumer and how much by the producer?

3. One table below represents a supply curve; the other represents a demand curve.

p (\$/unit)	182	167	153	143	133	125	118
q (quantity)	5	10	15	20	25	30	35

p (\$/unit)	6	35	66	110	166	235	316
q (quantity)	5	10	15	20	25	30	35

- Which table represents which curve? Why?
- At a price of \$155, approximately how many items would consumers purchase?
- At a price of \$155, approximately how many items would manufacturers supply?
- Will the market push prices higher or lower than \$155?
- What would the price have to be if you wanted consumers to buy at least 20 items?
- What would the price have to be if you wanted manufacturers to supply at least 20 items?