

Homework
#20
Math 211

Problems for Section 6.2

1. (a) What are the equilibrium price and quantity for the supply and demand curves in Figure 6.24?
- (b) Shade the areas representing the consumer and producer surplus and estimate them.

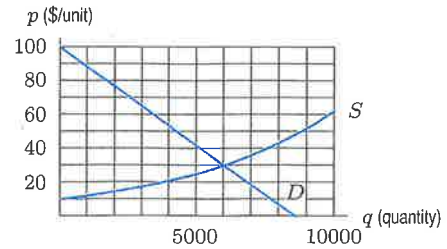


Figure 6.24

3. Find the consumer surplus for the demand curve $p = 100 - 3q^2$ when 5 units are sold.
5. Find the consumer surplus for the demand curve $p = 100 - 4q$ when $q = 10$.
7. Supply and demand curves for a product are in Figure 6.27.
 - (a) Estimate the equilibrium price and quantity.
 - (b) Estimate the consumer and producer surplus. Shade them.
 - (c) What are the total gains from trade for this product?

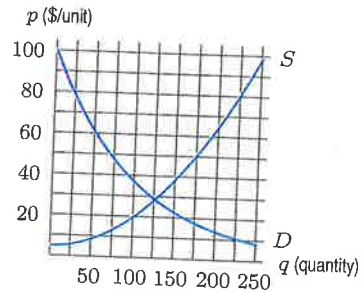


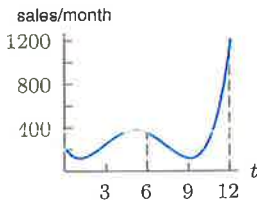
Figure 6.27

11. Rent controls on apartments are an example of price controls on a commodity. They keep the price artificially low (below the equilibrium price). Sketch a graph of supply and demand curves, and label on it a price p^- below the equilibrium price. What effect does forcing the price down to p^- have on:
 - (a) The producer surplus?
 - (b) The consumer surplus?
 - (c) The total gains from trade (Consumer surplus + Producer surplus)?

Solutions

Section 6.1

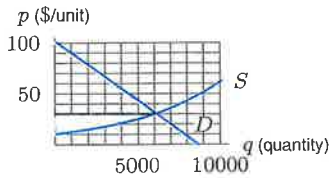
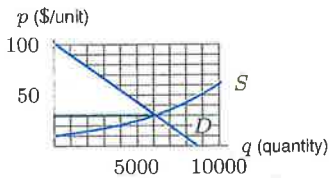
- 1 1.7
 3 2
 5 -3
 7 About 8.5
 9 (a) \$26,667 per year
 (b) Less 25-65; more 65-85
 11 \$6080
 13 (a) 120 mm Hg
 (b) 80 mm Hg
 (c) 100 mm Hg
 (d) Less
 15 (a) 0.375 thousand/hour
 (b) 1.75 thousands
 17 (a) 9.9 hours
 (b) 14.4 hours
 (c) 12.0 hours
 19 (a) Second half



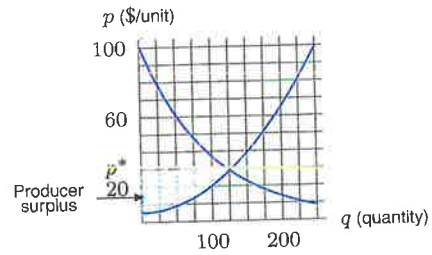
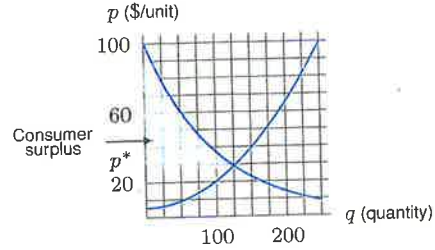
- (b) \$1531.20, \$1963.20
 (c) \$3494.40
 (d) \$291.20/month
 21 (c) < (a) < (b)

Section 6.2

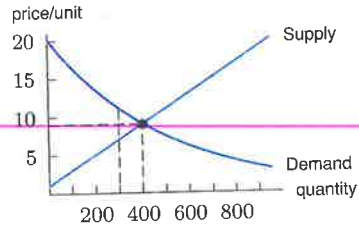
- 1 (a) $p^* = \$30, q^* = 6000$
 (b) Consumer surplus = \$210,000;
 Producer surplus \approx \$70,000



- 3 250
 5 200
 7 (a) Equilibrium price is \$30
 Equilibrium quantity is 125 units
 (b) \$3500
 \$2000



- (c) \$5500
 9 (a) Supplied: \$11, demanded: \$7
 (b) $p^* \approx \$9$
 $q^* \approx 400$



- (c) \$1907
 (d) \$1600
 11 (a) Less
 (b) Can't tell
 (c) Less
 13 (a) No, yes

