Homework #19
Math 211

Problems for Section 6.1

1. What is the average value of the function f in Figure 6.4 over the interval $1 \leq x \leq 6$?

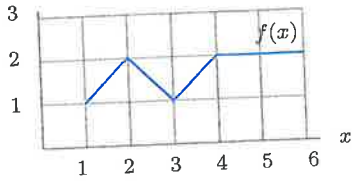


Figure 6.4

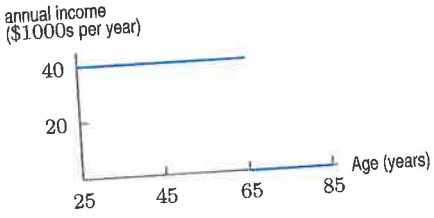
3. Find the average value of $g(t) = 1 + t$ over the interval $[0, 2]$

In Problems 9–10 annual income for ages 25 to 85 is given graphically. People sometimes spend less than their income (to save for retirement) or more than their income (taking out a loan). The process of spreading out spending over a lifetime is called consumption smoothing.

(a) Find the average annual income for these years.

(b) Assuming that the person spends at a constant rate equal to their average income, when are they spending less than they earn, and when are they spending more?

9.



11. The value, V, of a Tiffany lamp, worth \$225 in 1975, increases at 15% per year. Its value in dollars t years after 1975 is given by

$$V = 225(1.15)^t.$$

Find the average value of the lamp over the period 1975–2010.

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

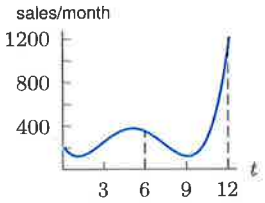
11 \$6080

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

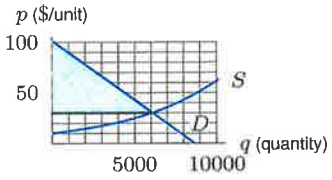


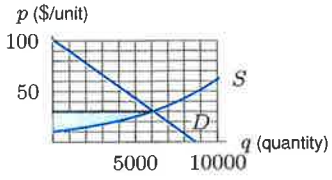
(b) \$1531.20, \$1963.20
(c) \$3494.40
(d) \$291.20/month

21 $(c) < (a) < (b)$

Section 6.2

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

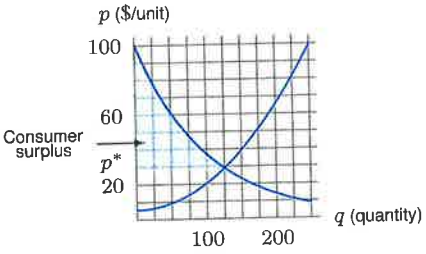


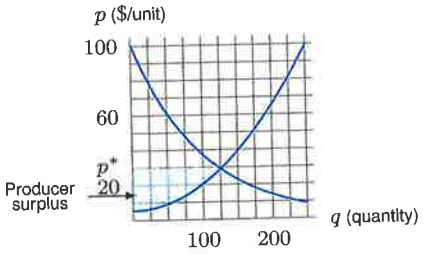


3 250

5 200

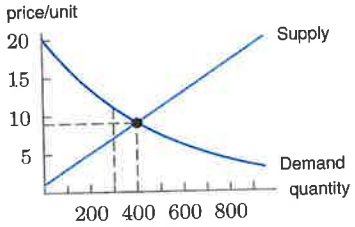
7 (a) Equilibrium price is \$30
Equilibrium quantity is 125 units
(b) \$3500
\$2000





(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