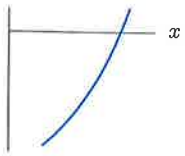
Homework #2

Problems for Section 1.3

In Problems 1–4, decide whether the graph is concave up, concave down, or neither.

1.

3.



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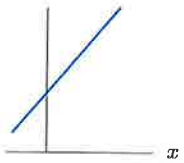


In Problems 5–8, find the relative, or percent, change.

5. S changes from 400 to 450

9. Table 1.10 gives values of a function $w = f(t)$. Is this function increasing or decreasing? Is the graph of this function concave up or concave down?

Table 1.10

t	0	4	8	12	16	20	24
w	100	58	32	24	20	18	17

13. Find the average rate of change of $f(x) = 3x^2 + 4$ between $x = -2$ and $x = 1$. Illustrate your answer graphically.

47. On Black Monday, October 28, 1929, the stock market on Wall Street crashed. The Dow Jones average dropped from 298.94 to 260.64 in one day. What was the relative change in the index?

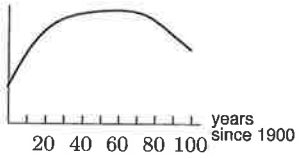
ANSWERS TO ODD-NUMBERED PROBLEMS

Section 1.1

1 (a) (IV)
(b) (II)
(c) (III)

3 Argentina produced 9 million metric tons of wheat in 2002

5 population



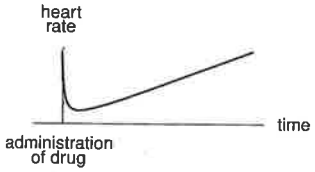
7 $f(5) = 13$

9 $f(5) = 3$

11 $f(5) = 4.1$

13 (b) CFC consumption in 1987
(c) Year CFC consumption is zero

17



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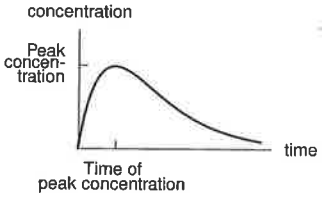

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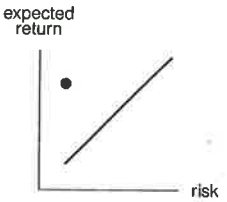
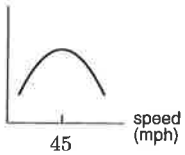


23 (a) (III)
(b) Potato's temperature before put in oven

25



Section 1.2

1 Slope: $-12/7$
Vertical intercept: $2/7$

3 Slope: 2
Vertical intercept: $-2/3$

5 $y = (1/2)x + 2$

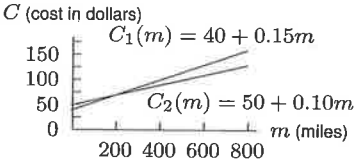
7 $y = (1/2)x + 2$

9 (a) l_1
(b) l_3
(c) l_2
(d) l_4

11 (a) $P = 30{,}700 + 850t$
(b) 39,200 people
(c) In 2016

13 (a) $C_1 = 40 + 0.15m$
$C_2 = 50 + 0.10m$

(b)



(c) For distances less than 200 miles, C_1 is cheaper.
For distances more than 200 miles, C_2 is cheaper.

15 (a) 1.8 billion dollars/year
(b) 19.1 billion dollars
(c) 28.1 billion dollars
(d) 2011

17 (a) Linear
(b) Linear
(c) Not linear

19 (a) $q = -(1/3)p + 8$
(b) $p = -3q + 24$

21 (a) $P = 11.3 + 0.4t$
(b) 13.7%
(c) 1.4%

23 (b) $P = 100 - 0.5d$
(c) -0.5%/ft
(d) 100%; 200 ft

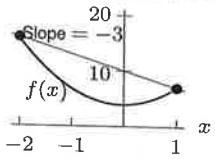
25 (a) $C = 3.68 + 0.12w$
(b) 0.12 \$/gal
(c) \$3.68

27 (a) $\Delta w/\Delta h$ constant
(b) $w = 5h - 174$; 5 lbs/in
(c) $h = 0.2w + 34.8$; 0.2 in/lb

29 (c)

31 (a) 60, 40 years
(b) (ii)
(c) 6.375 beats/minute more under new formula

33 No



15 (a) 90 million bicycles
(b) 1.8 million bicycles per year

17 (a) 115,000 people/year
(b) 0.07, 0.08, 0.41, 0.06
(c) 115,000 people/year

19 (a) \$18,280 million
(b) \$3656 million per year

21 1 meter/sec

23 $72/7 = 10.286$ cm/sec

25 (a) Negative
(b) Positive
(c) Negative
(d) Negative
(e) Positive

27 1490 thousand people/year
912.9 thousand people/year
1879 thousand people/year

29 (a) $-$\$35 billion dollars
(b) $-$\$7 billion dollars per year
(c) Yes; 2006–2007, 2007–2008

31 (a) Negative
(b) -0.087 mg/hour

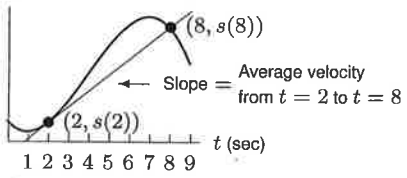
33 15.468, 57.654, 135.899, 146.353, 158.549 people/min

35 (a) -11 cm/sec
(b) -5.5 (cm/sec)/kg

37 (a) Concave up; no
(b) 2.6 m/sec

39 Decreasing, concave down

41 (a)



(b) Between $t = 3$ and $t = 6$
(c) Negative

43 The change in 1800-1810

45 The increase from \$100,000 to \$500,000

47 Decrease 12.8%

49

Year	2005	2006	2007	2008
Inflation	4.0%	2.1%	4.3%	0.0%

Section 1.3

1 Concave down

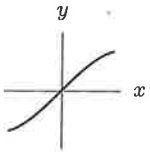
3 Concave up

5 Increases by 12.5%

7 Decreases by 6%

9 Decreasing
Concave up

11



13 -3