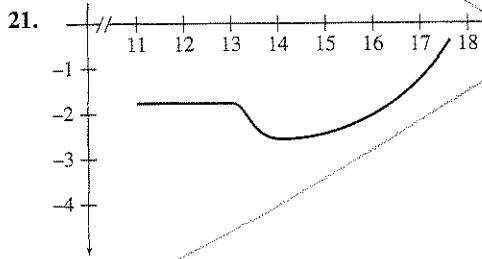
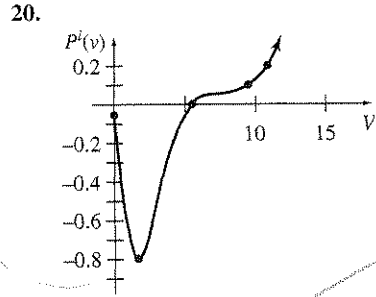
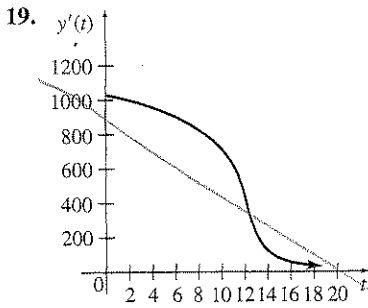
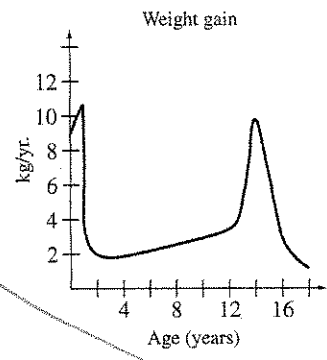


# CALCULUS

ch. 3



About 9 cm; about 2.6 cm less per year



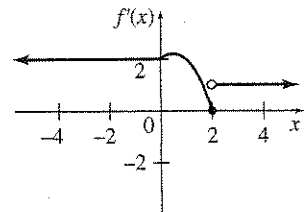
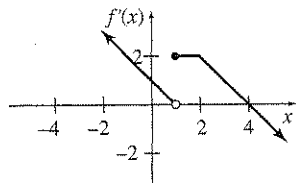
Concept Check (page 225)

1. True 2. True 3. True 4. False 5. True 6. False 7. False 8. True 9. True 10. True 11. False 12. False

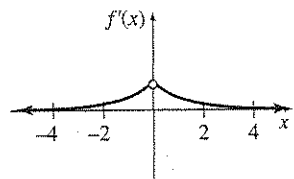
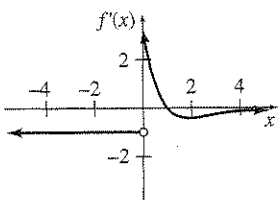
Chapter 3 Review Exercises (page 226)

Start HERE

5. a. 4 b. 4 c. 4 d. 4 6. a. -2 b. 2 c. Does not exist d. -2 7. a.  $\infty$  b.  $-\infty$  c. Does not exist d. Does not exist  
 8. a. 1 b. 1 c. 1 d. Does not exist 9.  $\infty$  10. -3 11. 19/9 12. Does not exist 13. 8 14. 7 15. -13  
 16. 16 17. 1/6 18. 1/8 19. 2/5 20. 0 21. 3/8 22. -6 23. Discontinuous at  $x_2$  and  $x_4$  24.  $x_1$  and  $x_4$  25. 0, does not exist, does not exist; -1/3, does not exist, does not exist 26. 1, does not exist, does not exist; -3 does not exist, does not exist  
 27. -5, does not exist, does not exist 28. -3, -6, does not exist 29. Continuous everywhere 30. Continuous everywhere  
 31. a. b. 1 c. 0, 2 32. a. b. 2 c. 0, 1



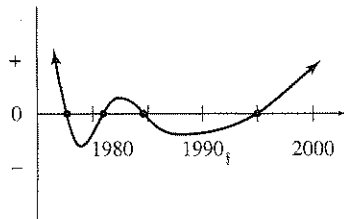
33. 2 34. -13 35. 126; 18 36. -68; -12 37. 9/77; 18/49 38. -5/4; -5 39. a.  $y = 13x - 17$  b.  $y = 7x - 5$   
 40. a.  $y = -(2/3)x + 7/3$  b.  $y = -4x + 4$  41. a.  $y = -x + 9$  b.  $y = -3x + 15$  42. a.  $y = (2/5)x + 2$   
 b.  $y = (1/2)x + 3/2$  43.  $8x + 3$  44.  $10x - 6$  45. 1.332 46. 1.121  
 47. 48. 49. e



\* Answer to Last Page \*

HEY SLOW UP

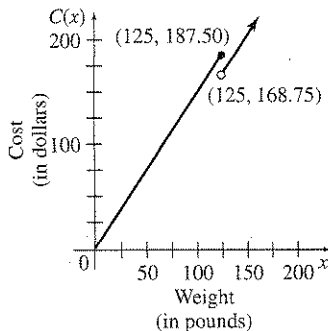
50.



1997 earnings: approximately \$10 per hour; 1997 rate of change of earnings: \$2 per hour per year

51. a.  $R'(x) = 16 - 6x$  b.  $-44$ ; an increase of \$100 spent on advertising when advertising expenditures are \$1000 will result in the revenue decreasing by \$44.

52. a. \$150 b. \$187.50 c. \$189 d.

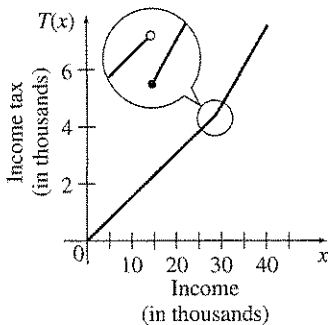


e. Discontinuous at  $x = \$125$  f. \$1.50 g. \$1.50 h. \$1.35 i. 1.5; when 100 lb are purchased, an additional pound will cost \$1.50 more. j. 1.35; when 140 lb are purchased, an additional pound will cost \$1.35 more.

53. a. \$3.40 b. \$3.28 c. \$3.18 d. \$3.15 e. \$10.15 f. \$15.15 g.  $[0, \infty)$  h. No i.  $\bar{P}(x) = 15 + 25x$  j.  $\bar{P}'(x) = 25$  k. No, the profit per pound never changes, no matter how many pounds are sold.

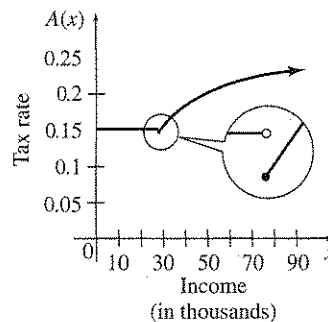
54. b.  $x = 7.5$  c. The marginal cost equals the average cost at the point where the average cost is smallest.

55. a. \$4395 b. \$4350 c. Does not exist d.



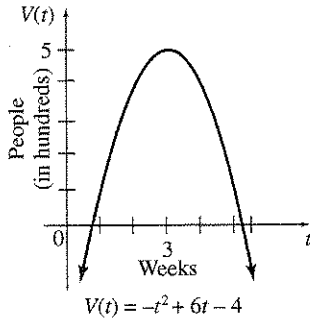
e. 29,300

f.  $A(x) = \begin{cases} 0.15 & \text{for } 0 \leq x \leq 29,300 \\ 0.27 - 3561/x & \text{for } x > 29,300 \end{cases}$  g. 0.15 h. 0.1485 i. Does not exist j. 0.27 k.

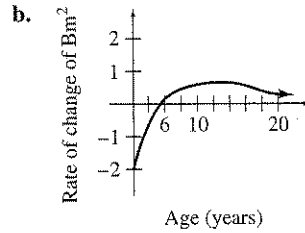
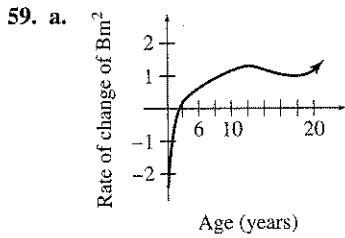
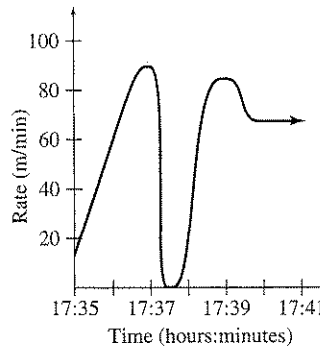


56. a. 0.02; the risk of heart attack is going up at a rate of 0.02 per 1000 people for each increase in the blood cholesterol of 1 mg/dL  
 b. 0.15; the risk of heart attack is going up at a rate of 0.15 per 1000 people for each increase in the blood cholesterol of 1 mg/dL  
 c. 0.065 per 1000 people per mg/dL of cholesterol

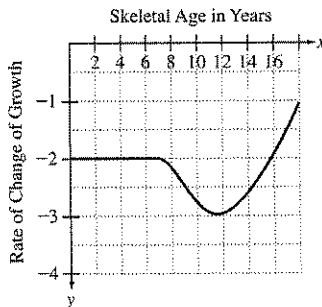
57. a.  $V(t)$  b.  $[0.8, 5.2]$  c. 3 weeks; 500 cases d.  $V'(t) = -2t + 6$  e. 0 f. +; -



58. a. i. About 90 m per minute ii. About 85 m per minute b.



60. The remaining growth is about 14 cm and the rate of change is about  $-2.75$  cm per year.



61. a. 1; the ball is rising 1 ft for each foot it travels horizontally. b.  $-2.7$ ; the ball is dropping 2.7 ft for each foot it travels horizontally. 62. a. Nowhere b. 50, 130, 230, 770 c.

