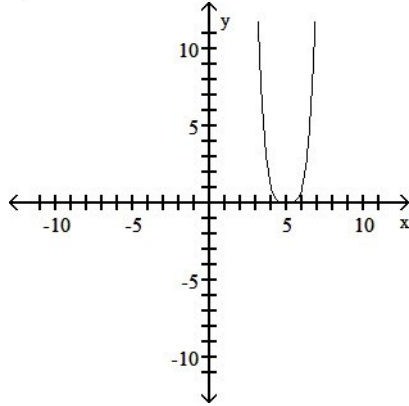


Chapter 4 Spiral Review Solutions

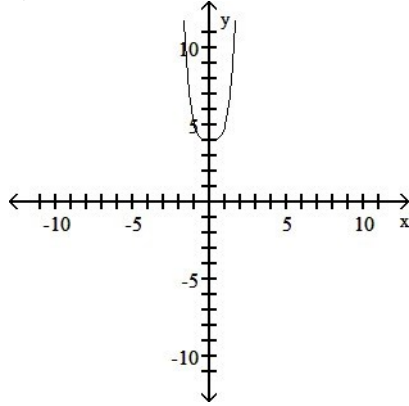
1) Yes; degree 3

2) Yes; degree 2

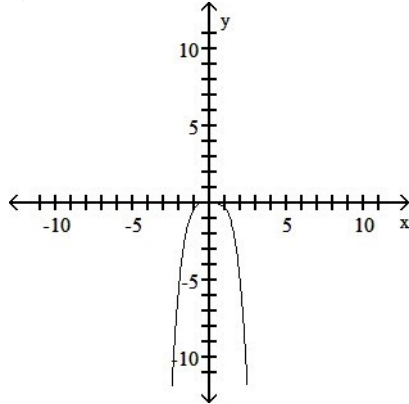
3)



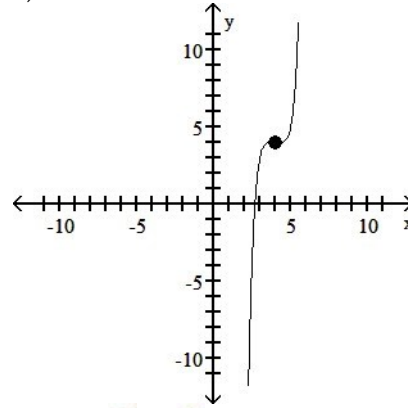
4)



5)



6)



7) $f(x) = x^3 + 2x^2 - 9x - 18$ for $a = 1$

8) $f(x) = x^3 - 4x + 4x^2 - 16$ for $a = 1$

9) -1, multiplicity 1, crosses x-axis; -2, multiplicity 3, crosses x-axis

10) -1, multiplicity 2, touches x-axis

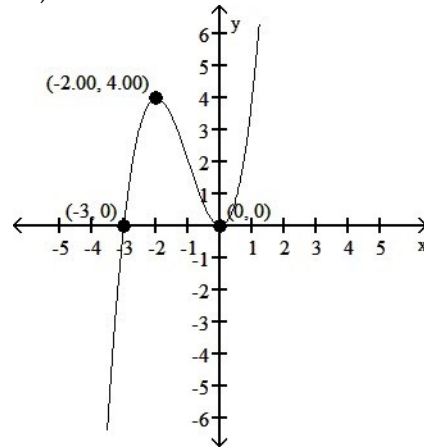
11) x-intercepts: -3, -2, 2; y-intercept: -12

12) x-intercepts: -7, -1, 0, 1; y-intercept: 0

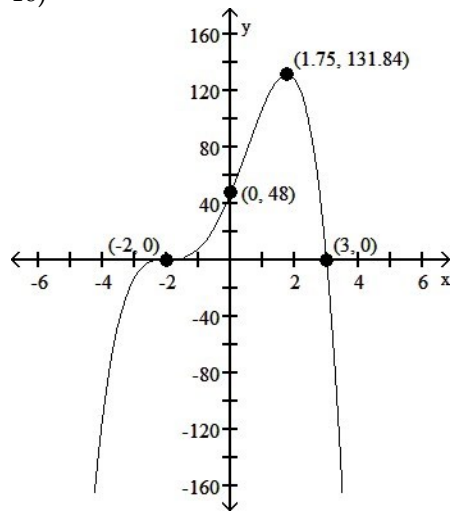
13) 6

14) 2

15)



16)



17) $R = 16$

18) Yes

19) No

20) $\pm \frac{1}{2}, \pm 1, \pm 2, \pm 4, \pm 8$

21) $\pm \frac{1}{11}, \pm \frac{5}{11}, \pm 1, \pm 5$

22) $-4, 4; f(x) = (x - 4)(x + 4)(x^2 + 4)$

23) $\frac{2}{3}; f(x) = (3x - 2)(x^2 + 2)$

24) $\left\{ \frac{1}{2}, \sqrt{10}, -\sqrt{10} \right\}$

25) $\{-4, -2, -3\}$

26) $5 + 5i, -2i$

27) $4 + i$

28) $f(x) = (x - 1)(x + 5i)(x - 5i)$

29) $\{x \mid x \neq -1, x \neq 1\}$

30) all real numbers

31) $x = -8, x = 8$

32) none

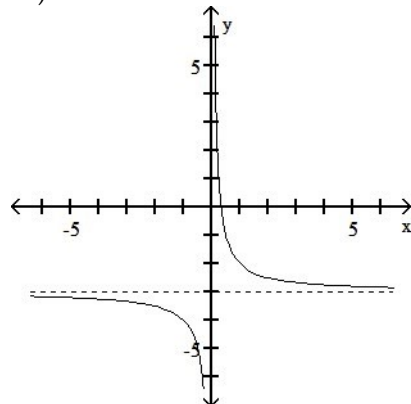
33) $y = 4$

34) $y = 0$

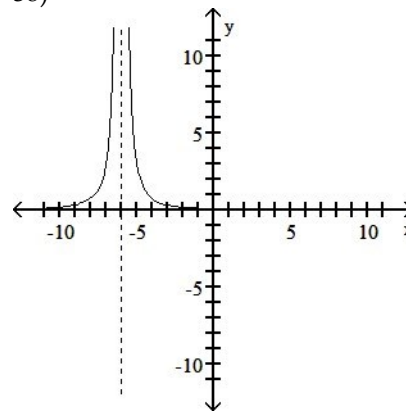
35) $y = -1$

36) $y = x + 10$

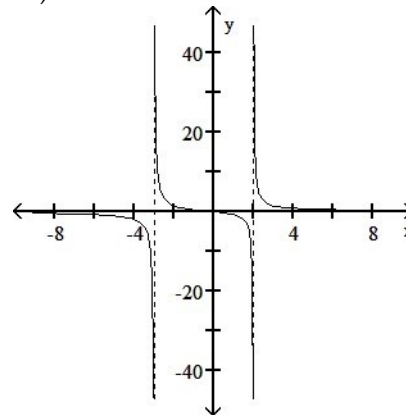
37)



38)



39)



40) $t = 0.55$ minutes after the injection is given

41) $(-\infty, -6) \cup (-3, -1)$

42) $(6, \infty)$

43) $(-\infty, -3) \cup (2, \infty)$

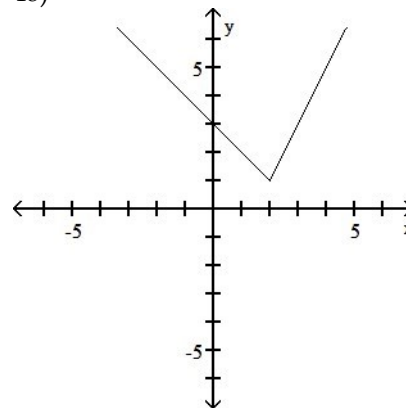
44) $(-2, 1)$

45) even

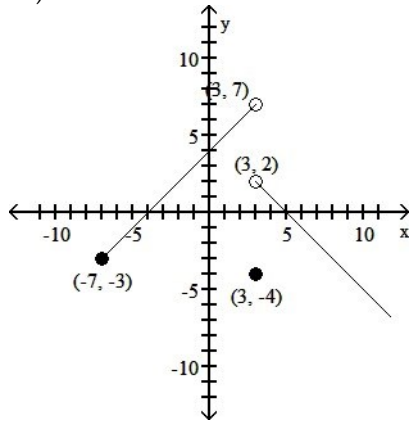
46) neither

47) odd

48)



49)



50) $5x^2 - 8x + 9$

51) $(f - g)(x) = 2x + 4$; all real numbers

52) 3

53) local maximum at $(0, 6)$

local minimum at $(2.67, -3.48)$

increasing on $(-1, 0)$ and $(2.67, 4)$

decreasing on $(0, 2.67)$