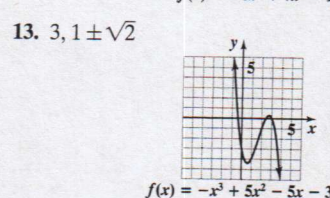
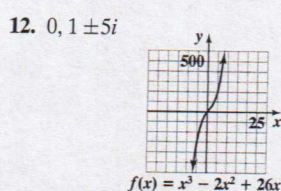
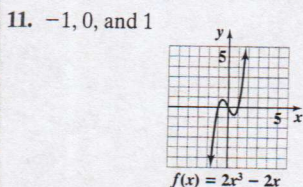
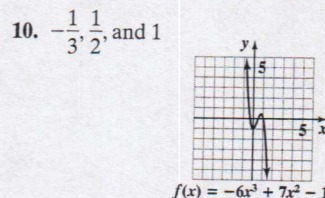
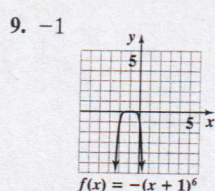
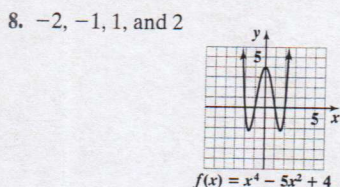
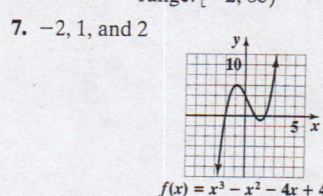
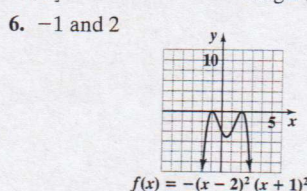
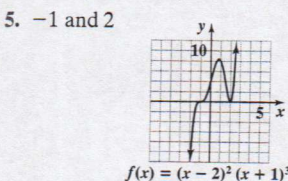
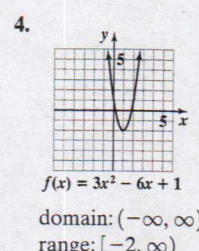
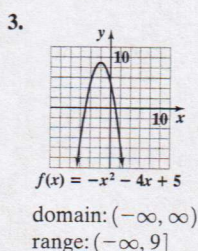
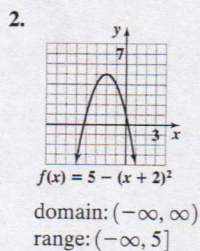
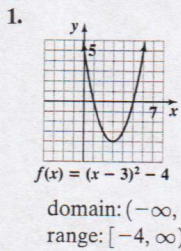


Mid-Chapter 3 Check Point

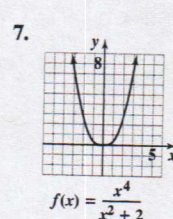
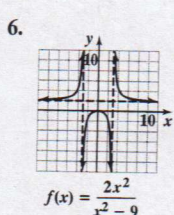
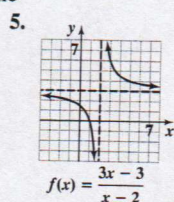
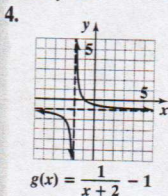


14. $\{-2, 1\}$ 15. $\{\frac{1}{3}, \frac{1}{2}, 1\}$ 16. $\{-\frac{1}{2}, \frac{2}{3}, \frac{7}{2}\}$ 17. $\{-10, -\frac{5}{2}, 10\}$ 18. $\{-3, 4, \pm i\}$ 19. $\{-3, \frac{1}{2}, 1 \pm \sqrt{3}\}$
 20. 75 cabinets per day; \$1200 21. -9, -9; 81 22. 10 in.; 100 sq in. 23. $2x^2 - x - 3 + \frac{x + 1}{3x^2 - 1}$ 24. $2x^3 - 5x^2 - 3x + 6$
 25. $f(x) = -2x^3 + 2x^2 - 2x + 2$ 26. $f(x) = x^4 - 4x^3 + 13x^2 - 36x + 36$ 27. yes

Section 3.5

Check Point Exercises

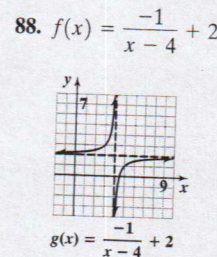
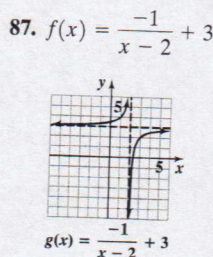
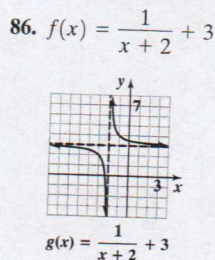
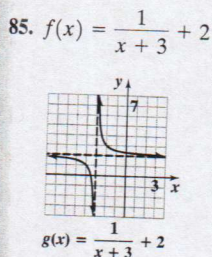
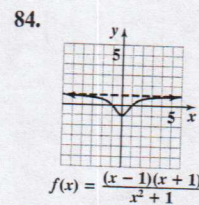
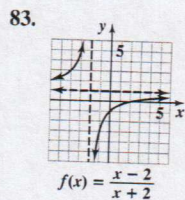
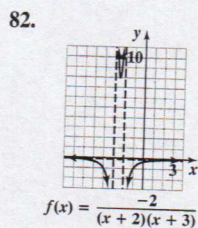
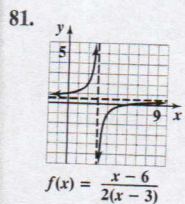
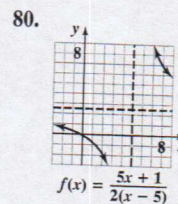
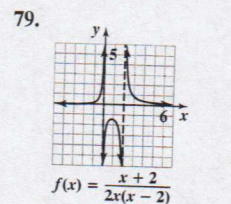
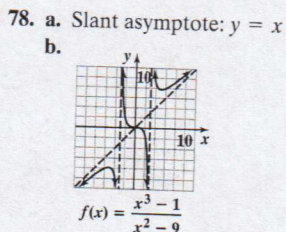
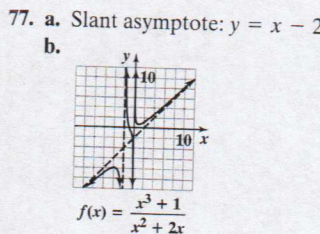
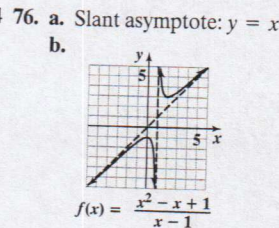
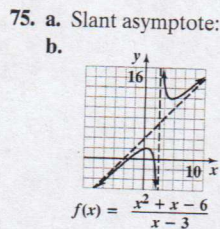
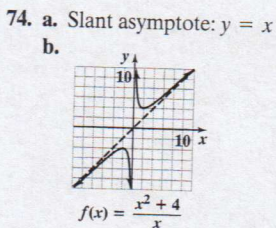
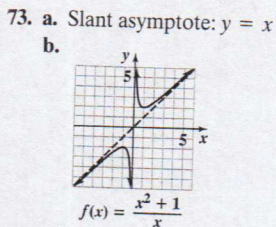
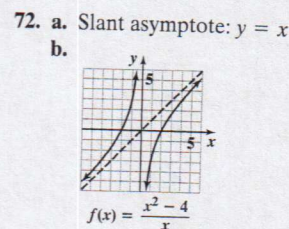
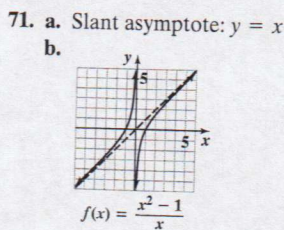
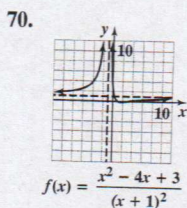
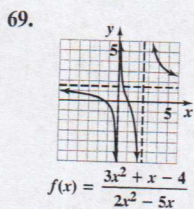
1. a. $\{x|x \neq 5\}$ b. $\{x|x \neq -5, x \neq 5\}$ c. all real numbers 2. a. $x = 1, x = -1$ b. $x = -1$ c. none
 3. a. $y = 3$ b. $y = 0$ c. none



8. $y = 2x - 1$ 9. a. $C(x) = 500,000 + 400x$ b. $\bar{C}(x) = \frac{500,000 + 400x}{x}$ c. $\bar{C}(1000) = 900$: The average cost per wheelchair of producing 1000 wheelchairs per month is \$900.; $\bar{C}(10,000) = 450$: The average cost per wheelchair of producing 10,000 wheelchairs per month is \$450.; $\bar{C}(100,000) = 405$: The average cost per wheelchair of producing 100,000 wheelchairs per month is \$405. d. $y = 400$: The cost per wheelchair approaches \$400 as more wheelchairs are produced.

Exercise Set 3.5

1. $\{x|x \neq 4\}$ 2. $\{x|x \neq 8\}$ 3. $\{x|x \neq 5, x \neq -4\}$ 4. $\{x|x \neq 2, x \neq -6\}$ 5. $\{x|x \neq 7, x \neq -7\}$ 6. $\{x|x \neq 8, x \neq -8\}$
 7. all real numbers 8. all real numbers 9. $-\infty$ 10. $+\infty$ 11. $-\infty$ 12. $+\infty$ 13. 0 14. 0 15. $+\infty$ 16. $-\infty$
 17. $-\infty$ 18. $+\infty$ 19. 1 20. 1 21. $x = -4$ 22. $x = 3$ 23. $x = 0, x = -4$ 24. $x = 0, x = 3$ 25. $x = -4$
 26. $x = 3$ 27. no vertical asymptotes 28. no vertical asymptotes 29. $y = 0$ 30. $y = 0$ 31. $y = 4$ 32. $y = 5$
 33. no horizontal asymptote 34. no horizontal asymptote 35. $y = -\frac{2}{3}$ 36. $y = -\frac{3}{5}$



89. a. $C(x) = 100x + 100,000$ b. $\bar{C}(x) = \frac{100x + 100,000}{x}$

c. $\bar{C}(500) = 300$, when 500 bicycles are produced, it costs \$300 to produce each bicycle; $\bar{C}(1000) = 200$, when 1000 bicycles are produced, it costs \$200 to produce each bicycle; $\bar{C}(2000) = 150$, when 2000 bicycles are produced, it costs \$150 to produce each bicycle; $\bar{C}(4000) = 125$, when 4000 bicycles are produced, it costs \$125 to produce each bicycle.

d. $y = 100$; The cost per bicycle approaches \$100 as more bicycles are produced.

90. a. $C(x) = 30x + 300,000$ b. $\bar{C}(x) = \frac{30x + 300,000}{x}$

c. $\bar{C}(1000) = 330$, when 1000 pairs of shoes are produced, it costs \$330 to produce each pair; $\bar{C}(10,000) = 60$, when 10,000 pairs of shoes are produced, it costs \$60 to produce each pair; $\bar{C}(100,000) = 33$, when 100,000 pairs of shoes are produced, it costs \$33 to produce each pair.

d. $y = 30$; The cost per pair of shoes approaches \$30 as more shoes are produced.

91. a. 6.0 b. after 6 minutes; about 4.8 c. 6.5 d. $y = 6.5$; Over time, the pH level rises back to normal. e. It quickly drops below normal and then slowly begins to approach the normal level.

92. a. approximately 1.5 mg per liter b. 1.5 mg per liter c. $y = 0$; Over time, the drug's concentration will approach 0 mg per liter.

93. 90; An incidence ratio of 10 means 90% of the deaths are smoking related. 94. 89; An incidence ratio of 9 means about 89% of the deaths are smoking related. 95. $y = 100$; The percentage of deaths cannot exceed 100% as the incidence ratios increase. 96. No; according to the model and its graph, there is no incidence ratio that will produce a 100 percentage of deaths.

97. a. $f(x) = \frac{11x^2 + 40x + 1040}{12x^2 + 230x + 2190}$ b. 63%

c. 64%; overestimates by 1% d. $y = \frac{11}{12}$; 92%; Answers may vary.