Chapter 12

12.1 **Graph the inverse variation equation.**

1. $y = \frac{-1}{x}$ **2.** $y = \frac{8}{x}$ **3.** $y = \frac{12}{x}$ **4.** $y = \frac{-14}{x}$

12.1 **Given that y varies inversely with x, use the specified values to write an inverse variation equation that relates x and y. Then find the value of y when $x = 2$.**

5. $x = 3, y = 4$ **6.** $x = -2, y = 5$ **7.** $x = -4, y = -15$

8. $x = 8, y = -6$ **9.** $x = -7, y = -7$ **10.** $x = -11, y = 11$

12.2 **Graph the function.**

11. $y = \frac{6}{x}$ **12.** $y = \frac{-6}{x}$ **13.** $y = \frac{1}{5x}$ **14.** $y = \frac{1}{x} + 6$

15. $y = \frac{1}{x - 4}$ **16.** $y = \frac{1}{x - 5} + 3$ **17.** $y = \frac{4}{x + 2} - 3$ **18.** $y = \frac{-2}{x + 1} - 3$

12.3 **Divide.**

19. $(30x^4 - 12x^3 + 6x^2) \div (-6x)$ **20.** $(9y^2 + 3y - 6) \div (3y - 2)$

21. $(3v^2 + 2v + 12) \div (v + 2)$ **22.** $(-24w - 11 + 8w^2) \div (2 + 4w)$

23. $(9m^2 - 6) \div (3m - 4)$ **24.** $(-2 + 25n^2) \div (2 + 5n)$

12.4 **Simplify the rational expression, if possible. State the excluded values.**

25. $\frac{44x^3}{24x}$ **26.** $\frac{3y + 6}{y + 2}$ **27.** $\frac{3a - 15}{4a - 20}$ **28.** $\frac{2b - 8}{4 - b}$

29. $\frac{r^2 - 2r - 15}{r^2 + r - 6}$ **30.** $\frac{s + 3}{2s^2 + 3s - 9}$ **31.** $\frac{2m^2 + 8m - 24}{3m^3 + 24m^2 + 36m}$ **32.** $\frac{6n^3 - 18n^2}{3n^3 - 27n}$

Find the sum, difference, product, or quotient.

12.5 **33.** $\frac{x^2 + 3x - 10}{2x - 4} \cdot \frac{5x}{x^2 + 2x - 15}$ **34.** $\frac{2y^6}{6y^3 + 8y^2} \cdot (3y + 4)$

35. $\frac{3r^2 - 12}{r - 2} \div \frac{2r^2 + 7r + 6}{2r^2 - r - 6}$ **36.** $\frac{3s^2 + 11s + 10}{s + 2} \div (-3s^2 + s + 10)$

12.6 **37.** $\frac{8}{5t} + \frac{3}{2t^2}$ **38.** $\frac{3}{u + 2} + \frac{4}{2u + 1}$

39. $\frac{3}{c^2 - 9} - \frac{2}{2c^2 - 3c - 9}$ **40.** $\frac{k + 4}{k^2 + 4k + 4} - \frac{k - 4}{k^2 - k - 6}$

12.7 **Solve the equation. Check your solution.**

41. $\frac{2}{x + 2} = \frac{x - 5}{9}$ **42.** $\frac{y}{y - 1} + \frac{1}{4} = \frac{6}{y - 1}$

43. $\frac{z}{z + 3} + 2 = \frac{5}{z - 1}$ **44.** $\frac{1}{w + 5} - \frac{2}{w + 3} = \frac{6}{w^2 + 5w + 6}$

45. $\frac{3}{h + 4} - 4 = \frac{6}{h^2 + h - 12}$ **46.** $\frac{2}{a + 2} - \frac{5}{a + 2} = \frac{4}{a^2 + 4a + 4}$

EXTRA PRACTICE