

120 Final Review

Since I didn't put much space between each set of problems, you should probably do this work on another sheet of paper.

Chapter 6 Exponents:

1. $4y^2(2x^2y^3)^2$
2. $\left(\frac{9x^2y}{3xy}\right)^2$
3. $(2x^2y)^3(3xy^4)$
4. $(4x^{-2}y^3)^{-2}$
5. $\frac{-49x^2y^{-3}}{7x^{-3}y}$
6. $\frac{4x^{-5}y^{-2}}{(8x^7y^3)^{-2}}$
7. $(1.7 \times 10^{-3})(3.4 \times 10^{-4})$
8. $\frac{6.5 \times 10^4}{2.0 \times 10^{-3}}$
9. $2(-2x^2+8x-7)-3(-3x^2+12)$
10. $x(4x^2-10x+3)-2(4+2x-3x^2)+3(x^3-1+x)$
11. $(a-c)(a+c)$
12. $(6-2x)(2+3x)$
13. $(5-2y)^2$

Chapter 7 Factoring:

14. $60x^4y^2 + 6x^9y^3 - 18x^5y^2$
quad
15. $x(5x+3) + 2(3-5x)$
16. $48a^2b - 36ab^2$
17. $x^3 - 3x^2 - 40x$
18. $4x^2 - 9x + 5$
19. $9x^2 - 6x + 1$
20. $5x^2 - 32x + 12$
21. $49 - x^2$
22. $25a^2 - 49b^2$
23. $27x^2 - 75 = 0$
24. $3x^2 - 18x + 27 = 0$
25. $3 = 14x - 8x^2$

Chapter 8 Rational Expressions:

26. $\frac{15x^2y^3}{3z} \cdot \frac{6z^3}{5xy^3}$
27. $(x+7) \div \frac{x^2+3x-28}{x-4}$
28. $\frac{15}{y^2+2y-15} \div \frac{3}{y-3}$

$$29. \frac{3}{x+2} - \frac{7}{(x+2)^2} \qquad 30. \frac{x+2}{x^2-x-6} + \frac{x-3}{x^2-8x+15} \qquad 31. \frac{x}{x-4} - x$$

$$32. \frac{a}{a^2-64} + \frac{4}{a+8} = \frac{3}{a-8} \qquad 33. \frac{x-3}{x-2} + \frac{x+1}{x+3} = \frac{2x^2+1+1}{x^2+x-6}$$

34. C varies inversely as J . If $C = 7$ when $J = 3$, find J when $C = 42$

Chapter 9 Radicals and Roots:

$$35. z^{\frac{1}{3}}(2z^{\frac{5}{3}} - 4z) \qquad 36. \frac{3}{4}r^{-\frac{2}{3}}(4r^{-\frac{3}{2}} + \frac{4}{3}r^{\frac{2}{3}})$$

$$37. \sqrt{50x^3y^7} \qquad 38. \sqrt{\frac{125x^2y^5}{3z}} \qquad 39. \sqrt{\frac{12x}{5y}}$$

$$40. (\sqrt{3} - 5)^2 \qquad 41. (x - \sqrt{y})(x + \sqrt{y}) \qquad 42. \frac{5}{2 + \sqrt{5}}$$

$$43. \sqrt{x} + 3 = \sqrt{3x+9} \qquad 44. (x^2 + 5)^{\frac{1}{2}} = x + 1$$

Chapter 10 Quadratics:

45,46 Solve by completing the square:

$$45. x^2 - 8x + 15 = 0 \qquad 46. a^2 + 6a = 10$$

47-49, Solve by using the quadratic formula:

$$47. x^2 - 18 = 7x \qquad 48. 2x^2 - 3 + 4x = 0 \qquad 49. x^2 - 6x + 7 = 0$$

50,51 Use the discriminant to determine the number of solutions to the equation:

$$50. -3x^2 + 4x = 9 \qquad 51. -3x^2 - 4x + 8 = 0$$

52,53 Use a graph to solve the equations:

52. $x^2 + 6x + 5 \geq 0$

53. $x^2 - 2x - 15 < 0$

54-56 Find the vertex of the following:

54. $f(x) = x^2 - 18 + 8x$

55. $g(x) = -2x^2 + 8x$

56. $h(x) = 15 - x^2 - 2x$

57. Two machines can complete an order of fries in 12 minutes. The larger machine can finish the order by itself 1 minute less than the smaller machine. How long will it take each to complete the order by itself?

Chapter 11 Exponential and Logarithmic Functions:58-63 Suppose $f(x) = x^2 - 3x + 4$ and $g(x) = 2x - 5$. Find the following:

58. $(f \circ g)(x)$

59. $(g \circ f)(2)$

60. $(g \circ g)(-1)$

61. $(\frac{f}{g})(-2)$

62. $(f - g)(x)$

63. $(fg)(0)$

64-66 Translate to exponential:

64. $\log_x(x^2 - 69) = 69$

65. $\log_y y = y$

66. $\ln x = e$

67-69 Translate to logarithm:

67. $x^{\frac{9}{y}} = 69$

68. $12 = e^{x^2}$

69. $5 = 10^x$

70-73 Use properties of logarithms to solve the equations:

70. $\log_5(x + 1) - \log_5(2x - 2) = 1$

71. $\log_3 x + \log_3(x + 6) = 2$

72. $2^{2x+3} = 32$

73. $27^x = 3^{2x+5}$