Skill Review for Algebra 2 **Name:** _____

The algebra skills on this review must be mastered by all students prior to taking Algebra 2.

Solve the equation:

1. $4n - 2(3 - n) = -13$

2. $\dfrac{3y+2}{4} = 7$

Solve:

3. $\dfrac{25x}{5} - 7x = 12$

4. $-\dfrac{21x}{7} - 5x = 24$

5. Find the slope of the line passing through the points $A(6, -6)$ and $B(3, -8)$.

6. Find the slope of the line that contains $(5, -4)$ and $(-4, -4)$.

7. State the x- and y-intercepts of $y = 9x - 7$.

8. Graph the linear equation by finding x- and y-intercepts. $3x - 3y = -9$

9. Rewrite the equation in slope-intercept form. $5x - 2y - 7 = 0$

10. Rewrite the equation in slope-intercept form. $8x - 3y - 5 = 0$

11. Find the slope and y-intercept of the line $6x - 3y = -54$.

12. Solve the system by substitution: $y = 2x - 4$

$y = 3x$

Simplify:

33. $\frac{4x^3}{y^2} \cdot \frac{y^{-3}x^{-2}}{8x^{-1}}$

34. $(-3x^{-2})^{-3}$

35. $\frac{12x^{-3}}{y^4} \cdot \frac{(y^{-2}x^2)^{-1}}{15x^{-2}}$

36. Solve for x. $2^3 \cdot 4^x \cdot 8^2 = 16^3$

37. Solve for x. $3^3 \cdot 3^x \cdot 3^{x-1} = 3^{12}$

38. Solve for x. $4^{-2} \cdot 4^{x+1} \cdot 4^3 = 4^5$

Factor:

39. $x^2 + 15x + 54$

40. $6x^2 - 25x + 25$

41. $x^2 + 10x + 9$

42. $x^2 - 8x + 12$

43. $x^2 + 5x + 6$

Factor completely:

44. $16x^6 - 56x^9$

45. $20x^4 - 16x^6$

46. $21x^5 - 35x^7$

47. $15x^2 - 9x^5$

Solve the equation. Check for extraneous solutions.

61. $\sqrt{x+2} = x$

62. $\sqrt[3]{x-3} = 5$

63. $\sqrt[3]{x-9} = -3$

64. $(3x-8)^{1/2} = 5$

65. Multiply: $\dfrac{4y^2}{5} \cdot \dfrac{25x}{20y}$

Divide:

66. $\dfrac{2k^2}{8z^3} \div \dfrac{k^4}{z^6}$

67. $\dfrac{x^2+10x+24}{x^2-16} \div \dfrac{x+6}{x-6}$

68. Simplify the expression. $\dfrac{x^2-2x-3}{x^2-1}$

69. Simplify the expression. $\dfrac{x^2-x-12}{x^2+x-20}$

70. Multiply and simplify. $\dfrac{2x-3}{(x+3)^2} \cdot \dfrac{x^2+4x+3}{4x^2-9}$

71. Divide and simplify. $\dfrac{x^2+8x-20}{5x^3+50x^2} \div \dfrac{x^2+9x}{x^2+7x-18}$

72. Perform the indicated operations and simplify.

$$\frac{x+2}{x+9} \cdot \left[\frac{x^2+9x}{x^2-4} \div \frac{3x^2+6x}{x^2+2x}\right]$$

85. Perform the operations and simplify.

$$\frac{3x+4}{x^2-16} - \frac{2}{x-4}$$

86. Perform the operations and simplify.

$$\frac{3x-5}{x^2-25} - \frac{2}{x+5}$$

87. Perform the operations and simplify.

$$\frac{4x}{x^2-9} + \frac{2}{x+3} - \frac{2}{x-3}$$

Simplify:

88. $\dfrac{-3x+5}{-10x} + \dfrac{x-5}{-10x}$

89. $\dfrac{x+8}{8x} + \dfrac{3x-8}{8x}$

90. $\dfrac{-3x+2}{24x} + \dfrac{-x-2}{24x}$

91. $\dfrac{-x-7}{16x} + \dfrac{-3x+7}{16x}$

92. $\dfrac{-x-3}{-6x} + \dfrac{-x+3}{-6x}$

93. $\dfrac{3x+6}{54x} + \dfrac{3x-6}{54x}$

94. $\dfrac{2x-4}{-32x} + \dfrac{2x+4}{-32x}$

95. $\dfrac{3x+9}{-14x} + \dfrac{-x-9}{-14x}$

96. $\dfrac{x-3}{-10x} + \dfrac{-3x+3}{-10x}$