Key

Math 4

Name _____

Prerequisite Algebra Skills Practice 2

Date _____

1. Write the equation of the line that has a slope of 6 and passes through the point $(2,8)$

$8 = 6(2) + b$

$-4 = b$

$\boxed{f(x) = 6x - 4}$

2. Write the equation of the line that passes through the points $(-10,2)$ and $(8,8)$

$m = \frac{8-2}{8-10} = \frac{6}{18} = \frac{1}{3}$

$8 = \frac{1}{3}(8) + b$

$8 = \frac{8}{3} + b$

$\frac{24}{3} - \frac{8}{3}$

$b = \frac{16}{3}$

$\boxed{f(x) = \frac{1}{3}x + \frac{16}{3}}$

Write the following expressions without parenthesis. Simplify as much as possible.

3. $(2x-9)^2$

$(2x-9)$

$= 4x^2 - 18x - 18x + 81$

$= \boxed{4x^2 - 36x + 81}$

4. $(x+3)(2x-5)$

$= 2x^2 - 5x + 6x - 15$

$= \boxed{2x^2 + x - 15}$

5. $\frac{4x/5y}{6x^2} = \frac{4x}{5y} \cdot \frac{1}{6x^2}$ (2, 3x)

$= \boxed{\frac{2}{15xy}}$

6. $\frac{4x^3/7y^2}{6x^2/21y^5} = \frac{4x^3}{7y^2} \cdot \frac{21y^5}{6x^2}$ (2x, $3y^3$, 1, 3)

$= \frac{6xy^2}{3}$

$= \boxed{2xy^2}$

Simplify the following so that it is written as x^a

7. $(x^2)^4$

$= x^8$

8. $\frac{1}{x^3}$

$= x^{-3}$

9. $\sqrt[3]{x}$

$= x^{\frac{1}{3}}$

10. $x^4 \cdot x^3$

$= x^7$

11. $\sqrt[9]{x^{\frac{3}{2}}}$

$= x^{\frac{1}{6}}$

$\frac{\frac{3}{2}}{9} = \frac{\frac{3}{2}}{1} \cdot \frac{1}{9} = \frac{1}{6}$

12. $\frac{1}{\sqrt{x^4}}$

$= \frac{1}{x^{\frac{4}{2}}}$

$= \frac{1}{x^2} = \boxed{x^{-2}}$

In numbers 13-20, factor the following expressions.

13. $12x^2 - 16x$

$= 4x(3x - 4)$

14. $2x^2 + 3x - 5$

$= (2x + 5)(x - 1)$

15. $5x^2 + 13x + 6$

$= (5x + 3)(x + 2)$

16. $6x^2 + 17x - 14$

$= (2x + 7)(3x - 2)$

17. $18x^2 + 63x + 54$

$= 9(2x^2 + 7x + 6)$

$= \boxed{9(2x + 3)(x + 2)}$

18. $x^3 + 9x^2 + 20x$

$= x(x^2 + 9x + 20)$

$= x(x + 5)(x + 4)$

19. $25x^2 + 25x - 150$

$= 25(x^2 + x - 6)$

$= \boxed{25(x + 3)(x - 2)}$

20. $36x^3 - 25x$

$= x(36x^2 - 25)$

$= \boxed{x(6x + 5)(6x - 5)}$

Solve using the zero product property.

21. $51x^{333}(-16 + 9x^2) = 0$

$\boxed{x = 0}$

$9x^2 - 16 = 0$

$(3x + 4)(3x - 4) = 0$

$\boxed{x = -\frac{4}{3} \quad x = \frac{4}{3}}$

22. $5x^3 - 32x^2 - 21x = 0$

$x(5x^2 - 32x - 21) = 0$

$x(5x + 3)(x - 7) = 0$

$\boxed{x = 0, \; x = -\frac{3}{5}, \; x = 7}$