

CALCULUS

NAME: _____

DATE: _____ WEEK: _____

POINTS: _____

Draw the following intervals on the number line.

5. $(-\infty, 3)$

Use intervals to describe the real numbers satisfying the inequalities in Exercises 7–12.

7. $2 \leq x < 3$

10. $x \geq -1, x < 8$

13. If $f(x) = x^2 - 3x$, find $f(0)$, $f(5)$, $f(3)$, and $f(-7)$.

20. If $f(x) = x^2 + 4x + 3$, find $f(a - 1)$ and $f(a - 2)$.

In Exercises 53–56, compute $f(1)$, $f(2)$, and $f(3)$.

$$53. f(x) = \begin{cases} \sqrt{x} & \text{for } 0 \leq x < 2 \\ 1 + x & \text{for } 2 \leq x \leq 5 \end{cases}$$

Graph the following functions.

5. $f(x) = -2x + 3$

Sketch the graphs of the following functions.

28. $f(x) = \begin{cases} 1 + x & \text{for } x \leq 3 \\ 4 & \text{for } x > 3 \end{cases}$

Evaluate each of the functions in Exercises 33–38 at the given value of x .

35. $f(x) = |x|, x = 10^{-2}$

38. $f(x) = |x|, x = -\frac{2}{3}$

Let $f(x) = x^2 + 1$, $g(x) = 9x$, and $h(x) = 5 - 2x^2$. Calculate the following functions.

2. $f(x) - h(x)$

5. $\frac{f(t)}{g(t)}$

Let $f(x) = x^6$, $g(x) = \frac{x}{1-x}$, and $h(x) = x^3 - 5x^2 + 1$. Calculate the following functions.

25. $f(g(x))$

29. $g(h(t))$

Factor the polynomials in Exercises 13–24.

13. $x^2 + 8x + 15$

14. $x^2 - 10x + 16$

15. $x^2 - 16$

In Exercises 1–28, compute the numbers.

16. $(-5)^{-1}$

In Exercises 29–40, use the laws of exponents to compute the numbers.

34. $\frac{3^{5/2}}{3^{1/2}}$

In Exercises 41–70, use the laws of exponents to simplify the algebraic expressions. Your answer should not involve parentheses or negative exponents.

61. $\left(\frac{3x^2}{2y}\right)^3$

