

HW002 (HW-CALCULUS)

Chapter 1 Review: Functions

Determine the domain of each function.

1. $f(x) = \sqrt{2x+12}$
 $\sqrt{2x+12} \geq 0$
 $2x+12 \geq 0$ $x \geq -6$

2. $f(x) = \frac{1}{x^2-4}$
 $\frac{1}{x^2-4} \neq 0$
 $x^2-4 \neq 0$ $x \neq \pm 2$

Evaluate each function for the given values.

3. $f(x) = 2x^2 - 4$
 a. $f(3) = 2(3)^2 - 4 = 10$
 b. $f(0) = 2(0)^2 - 4 = -4$
 c. $f(x+2) = 2(x+2)^2 - 4$
 $\frac{2(x^2+4x+4)-4}{2x^2+8x+8-4}$

4. $g(x) = 5x + 3$
 a. $g(-2) = 5(-2) + 3 = -7$
 b. $g(0) = 5(0) + 3 = 3$
 c. $g(x^2) = 5(x^2) + 3$
 $\frac{5x^2+3}{5x^2+3}$

5. $h(x) = \begin{cases} 2x-5, & x \leq 0 \\ 2x^2-3, & x > 0 \end{cases}$
 a. $h(-2) = 2(-2)-5 = -9$
 b. $h(2) = 2(2)^2-3 = 5$
 c. $h(0) = 2(0)-5 = -5$
 d. $h(x) = 2(x^2)-3 = 2x^2-3$

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6. $f(x) = 3x^2 - 2x + 4$
 $\frac{3x^2-2x+4}{3x^2-2x+4}$

7. $f(x) = \frac{1}{x^2-2x+1}$
 $\frac{1}{x^2-2x+1} \neq 0$
 $x^2-2x+1 \neq 0$ $x \neq 1$

8. $g(x) = 2x + 6$
 a. $g(-4) = 2(-4) + 6 = -2$
 b. $g(0) = 2(0) + 6 = 6$

9. $f(x) = x^2 + 2x - 3$
 a. $f(-2) = (-2)^2 + 2(-2) - 3 = -3$
 b. $f(0) = 0^2 + 2(0) - 3 = -3$
 c. $f(x+2) = (x+2)^2 + 2(x+2) - 3$
 $\frac{x^2+4x+4+2x+4-3}{x^2+6x+9}$

10. $h(x) = \begin{cases} 2x+1, & x \leq 0 \\ 2x^2-1, & x > 0 \end{cases}$
 a. $h(-2) = 2(-2)+1 = -3$
 b. $h(2) = 2(2)^2-1 = 7$
 c. $h(0) = 2(0)+1 = 1$
 d. $h(x) = 2(x^2)-1 = 2x^2-1$