

Warm Up 12-11 AAT

Use the following functions to answer the questions below: $f(x) = x^2 - 1$ & $g(x) = \sqrt{x-2}$ & $h(x) = -2x - 5$

1. $(f+h)(x)$

$$f(x) + h(x)$$

$$x^2 - 1 + -2x - 5$$

$$\boxed{x^2 - 2x - 6}$$

2. $(fh)(x)$

$$f(x) \cdot h(x)$$

$$(x^2 - 1)(-2x - 5)$$

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

$$\boxed{-2x^3 - 5x^2 + 2x + 5}$$

3. $(f/h)(x)$

$$f(x)/h(x)$$

$$\boxed{\frac{x^2 - 1}{-2x - 5}}$$

↓

$$-2x - 5 = 0$$

$$x = -5/2$$

4. What would be the domain for #3?

$$x \neq -5/2$$

(divide by 0)

$$(-\infty, -5/2) \cup (-5/2, \infty)$$

5. $(f+g)(3)$

$$f(3) + g(3)$$

$$f(3) = 3^2 - 1 = 8$$

$$g(3) = \sqrt{3-2} = \sqrt{1} = 1$$

$$8 + 1 = \boxed{9}$$

6. $(f-h)(-1)$

$$f(-1) - h(-1)$$

$$f(-1) = (-1)^2 - 1 = 0$$

$$h(-1) = -2(-1) - 5 = -3$$

$$0 - (-3) = \boxed{3}$$

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

$$= (\sqrt{x-2})^2 - 1$$

$$= x - 2 - 1$$

$$= \boxed{x - 3}$$

8. $(h \circ f)(x)$

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

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

$$= \boxed{-2x^2 - 3}$$

9. $f(g(12))$

↓

$$g(12) = \sqrt{12-2} = \sqrt{10}$$

$$f(\sqrt{10}) = (\sqrt{10})^2 - 1$$

$$= \boxed{9}$$

10. What would be the domain for #7?

* look @ inside & final answer

$$x - 2 \geq 0$$

$$x \geq 2$$

$$D: [2, \infty)$$

11. What would be the domain for #8?

$$(-\infty, \infty)$$