

COMPOSITE FUNCTION Worksheet

Evaluate each composite value

1. If $f(x) = 3x - 5$ and $g(x) = x^2$, find $(f \circ g)(3)$

$$f \circ g(3) = f(g(3)) = f(3^2) = f(9) = 3(9) - 5 = 27 - 5 = 22$$
$$f \circ g(3) = 22$$

2. If $f(x) = -9x - 9$ and $g(x) = \sqrt{x - 9}$, find $(f \circ g)(10)$

$$f \circ g(10) = f(g(10)) = f(\sqrt{10 - 9}) = f(\sqrt{1}) = f(1) = -9(1) - 9$$
$$f \circ g(10) = -18$$

3. If $f(x) = -4x + 2$ and $g(x) = \sqrt{x - 8}$, find $(f \circ g)(12)$

$$f \circ g(12) = f(g(12)) = f(\sqrt{12 - 8}) = f(\sqrt{4}) = f(2)$$
$$= -4(2) + 2$$
$$f \circ g(12) = -6$$

4. If $f(x) = -3x + 4$ and $g(x) = x^2$, find $(g \circ f)(-2)$

$$g \circ f(-2) = g(f(-2)) = g(-3(-2) + 4) = g(10) = 10^2$$
$$g \circ f(-2) = 100$$

5. If $f(x) = -2x + 1$ and $g(x) = \sqrt{x^2 - 5}$, find $(g \circ f)(2)$

$$g \circ f(2) = g(f(2)) = g(-2(2) + 1) = g(-4 + 1) = g(-3)$$
$$= \sqrt{(-3)^2 - 5}$$
$$g \circ f(2) = \sqrt{4} = 2$$