Exercise 34

For the following exercises, find $(f \circ g)(x)$ and $(g \circ f)(x)$ for each pair of functions.

$$f(x) = 4 - x, \quad g(x) = -4x$$

Solution

Calculate $(f \circ g)(x)$ by plugging the formula for $g(x)$ in where x is in the formula for $f(x)$.

$$(f \circ g)(x) = f(g(x))$$
$$= 4 - (-4x)$$
$$= 4 + 4x$$

Calculate $(g \circ f)(x)$ by plugging the formula for $f(x)$ in where x is in the formula for $g(x)$.

$$(g \circ f)(x) = g(f(x))$$
$$= -4(4 - x)$$
$$= -16 + 4x$$