Exercise 35

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

$$f(x) = 3x + 2, \quad g(x) = 5 - 6x$$

Solution

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

$$(f \circ g)(x) = f(g(x))$$
$$= 3(5 - 6x) + 2$$
$$= 15 - 18x + 2$$
$$= 17 - 18x$$

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

$$(g \circ f)(x) = g(f(x))$$
$$= 5 - 6(3x + 2)$$
$$= 5 - 18x - 12$$
$$= -7 - 18x$$