Exercise 37

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

$$f(x) = \sqrt{x+2}, \quad g(x) = \frac{1}{x}$$

Solution

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

$$(f \circ g)(x) = f(g(x))$$

$$= \sqrt{\frac{1}{x} + 2}$$

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

$$(g \circ f)(x) = g(f(x))$$

$$= \frac{1}{\sqrt{x+2}}$$