

Exercise 203

For the following exercises, use composition to determine which pairs of functions are inverses.

$$f(x) = \frac{1}{x-1}, x \neq 1, g(x) = \frac{1}{x} + 1, x \neq 0$$

Solution

Take the composition of f and g and see if it results in x .

$$f \circ g = f(g(x)) = f\left(\frac{1}{x} + 1\right) = \frac{1}{\left(\frac{1}{x} + 1\right) - 1} = \frac{1}{\frac{1}{x}} = x$$

Therefore, f and g are inverses; they are reflections of one another about the line $y = x$.

