

Exercise 42

For the following exercises, for each pair of functions, find a. $(f \circ g)(x)$ and b. $(g \circ f)(x)$ Simplify the results. Find the domain of each of the results.

$$f(x) = 3x, g(x) = x + 5$$

[**TYPO: Place a period before the word, "simplify."**]

Solution

$$(f \circ g)(x) = f(g(x)) = f(x + 5) = 3(x + 5) = 3x + 15 \quad \text{Domain: } \{x \mid -\infty < x < \infty\}$$

$$(g \circ f)(x) = g(f(x)) = g(3x) = 3x + 5 \quad \text{Domain: } \{x \mid -\infty < x < \infty\}$$