

### Exercise 43

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.

$$f(x) = x + 4, g(x) = 4x - 1$$

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

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#### Solution

$$(f \circ g)(x) = f(g(x)) = f(4x - 1) = (4x - 1) + 4 = 4x + 3 \quad \text{Domain: } \{x \mid -\infty < x < \infty\}$$

$$(g \circ f)(x) = g(f(x)) = g(x + 4) = 4(x + 4) - 1 = 4x + 15 \quad \text{Domain: } \{x \mid -\infty < x < \infty\}$$