

Exercise 83

For the following exercises, use $f(x) = x^3 + 1$ and $g(x) = \sqrt[3]{x - 1}$.

What is the domain of $(f \circ g)(x)$.

Solution

Write $(f \circ g)(x)$.

$$\begin{aligned}(f \circ g)(x) &= f(g(x)) \\ &= (\sqrt[3]{x - 1})^3 + 1 \\ &= (x - 1) + 1 \\ &= x\end{aligned}$$

Any number can be plugged in for x at any point, so the domain is $(-\infty, \infty)$.