Exercise 75

For the following exercises, use each pair of functions to find $f(g(0))$ and $g(f(0))$.

$$f(x) = \frac{1}{x+2}, \quad g(x) = 4x + 3$$

Solution

To find $f(g(0))$, evaluate $g(0)$ first: $g(0) = 4(0) + 3 = 3$. Therefore,

$$f(g(0)) = f(3) = \frac{1}{3+2} = \frac{1}{5}.$$

To find $g(f(0))$, evaluate $f(0)$ first: $f(0) = \frac{1}{0+2} = 1/2$. Therefore,

$$g(f(0)) = g\left(\frac{1}{2}\right) = 4\left(\frac{1}{2}\right) + 3 = 5.$$