

Exercise 66

For the following exercises, write a formula for the function g that results when the graph of a given toolkit function is transformed as described.

The graph of $f(x) = \frac{1}{x}$ is vertically stretched by a factor of 8, then shifted to the right 4 units and up 2 units.

Solution

To vertically stretch the graph by a factor of 8, multiply the function by 8.

$$8\frac{1}{x} = \frac{8}{x}$$

To then shift it to the right 4 units, replace x with $x - 4$.

$$\frac{8}{x-4}$$

To then shift it up 2 units, add 2 to the function.

$$g(x) = \frac{8}{x-4} + 2$$

