Exercise 65

Exercises 59–68 tell in what direction and by what factor the graphs of the given functions are to be stretched or compressed. Give an equation for the stretched or compressed graph.

$$y = \sqrt{4 - x^2}, \quad \text{stretched horizontally by a factor of 2}$$

Solution

Replace x with $\frac{1}{2}x$ to stretch the graph horizontally by a factor of 2.

$$y = \sqrt{4 - \left(\frac{x}{2}\right)^2} = \sqrt{4 - \frac{x^2}{4}}$$