For the following functions, describe in words the dilations from the parent function \( f(x) = |x| \) to the new function \( g(x) \).

1. \( g(x) = 5|x| \)
2. \( g(x) = \frac{1}{3}|x| \)

For the following functions, describe in words the dilations from the parent function \( f(x) = \sqrt{9 - x^2} \) to the new function \( g(x) \).

3. \( f(x) = 2\sqrt{9 - (3x)^2} \)
4. \( f(x) = \frac{1}{5}\sqrt{9 - (\frac{2}{3}x)^2} \)

For the following functions, graph the parent function \( f(x) \) and the dilated function \( g(x) \) on the same axes.

5. \( f(x) = x^2 \quad g(x) = \left(\frac{1}{4}x\right)^2 \)
6. \( f(x) = \sqrt{x} \quad g(x) = 2\sqrt{x} \)
Answer Key:

1. Vertical stretch by a factor of 5.

2. Horizontal stretch by a factor of 3.

3. Vertical Stretch by a factor of 2 and horizontal compression by a factor of 3.

4. Vertical compression by a factor of $\frac{1}{5}$ and horizontal stretch by a factor of $\frac{3}{2}$.