For the following functions, describe in words the translations from the parent function $f(x) = x^2$ to the new function $g(x)$.

1. $g(x) = (x - 6)^2 + 2$

2. $g(x) = (x + 1)^2 - 3$

For the following functions, write the equation of a new function, g(x), that has been translated right 3 units and up 4 units from the given function.

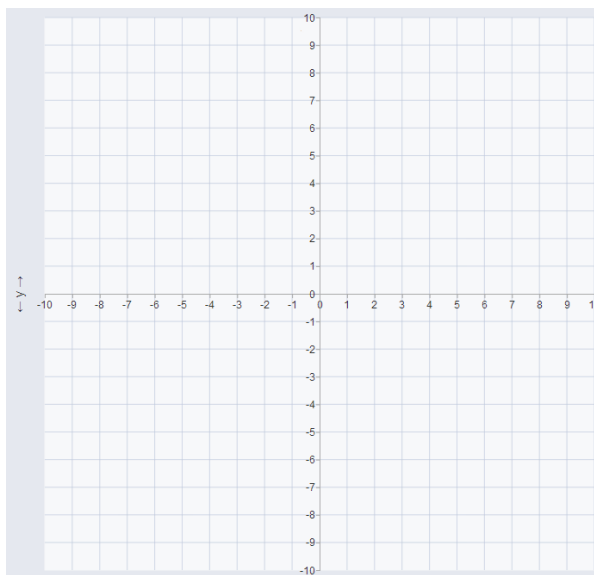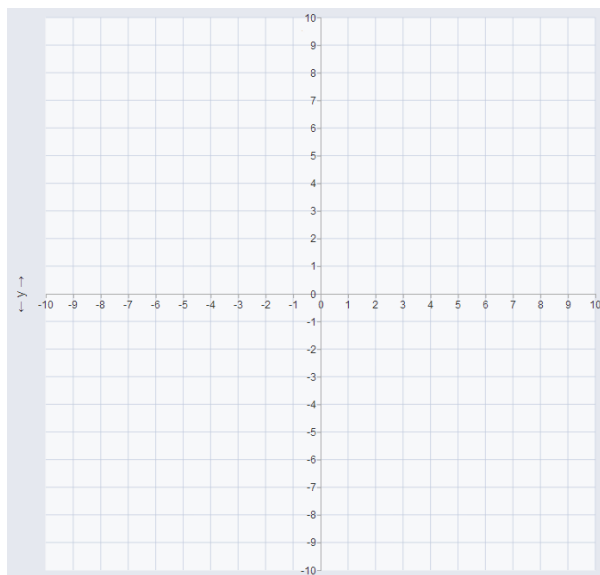3. $f(x) = \sqrt{x}$

4. $f(x) = (x - 2)^3 + 1$

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

5.

$$f(x) = \frac{1}{x} \qquad g(x) = \frac{1}{x - 2}$$

6.

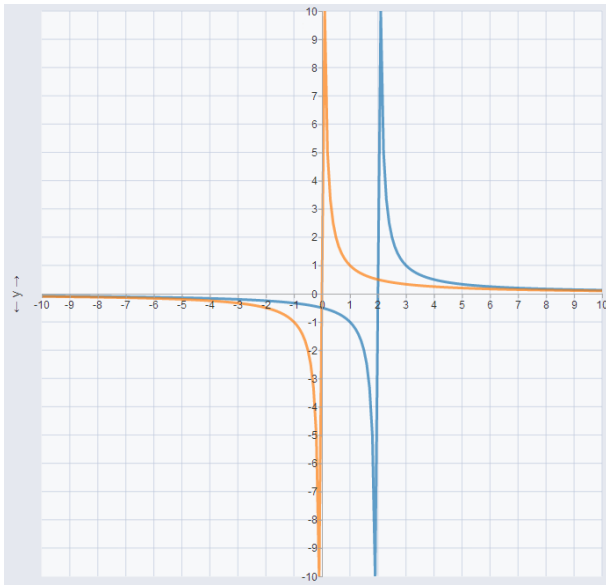$$f(x) = \sqrt{x} \qquad g(x) = \sqrt{x} - 3$$

Answer Key:

1. Horizontal translation right 6 units and vertical translation up 2 units.

2. Horizontal translation left 1 unit and vertical translation down 3 units.

3. $g(x) = \sqrt{x-3} + 4$

4. $g(x) = (x-5)^3 + 5$

5.

6.