

Horizontal Shifts

Let f be a function and c a positive real number.

- The graph of $y = f(x + c)$ is the graph of $y = f(x)$ shifted to the left c units.
 - Draw the graph of f and **shift the graph of f to the left c units.**
 - Changes in the equation $y = f(x)$: x is replaced with $x + c$.
- The graph of $y = f(x - c)$ is the graph of $y = f(x)$ shifted to the right c units.
 - Draw the graph of f and **shift the graph of f to the right c units.**
 - Changes in the equation $y = f(x)$: x is replaced with $x - c$.

Example 2:

- a. Use the graph of $f(x) = \sqrt{x}$ to obtain the graph of $g(x) = \sqrt{x+4}$ and $h(x) = \sqrt{x-4}$

