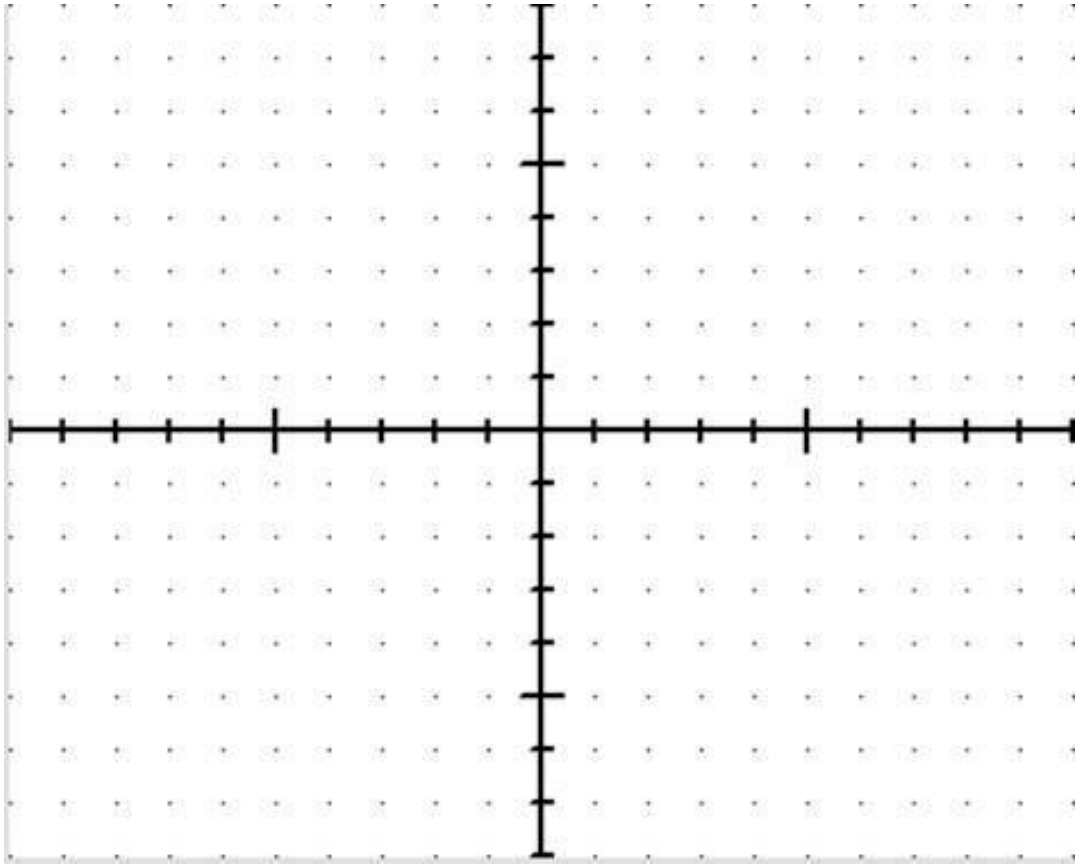
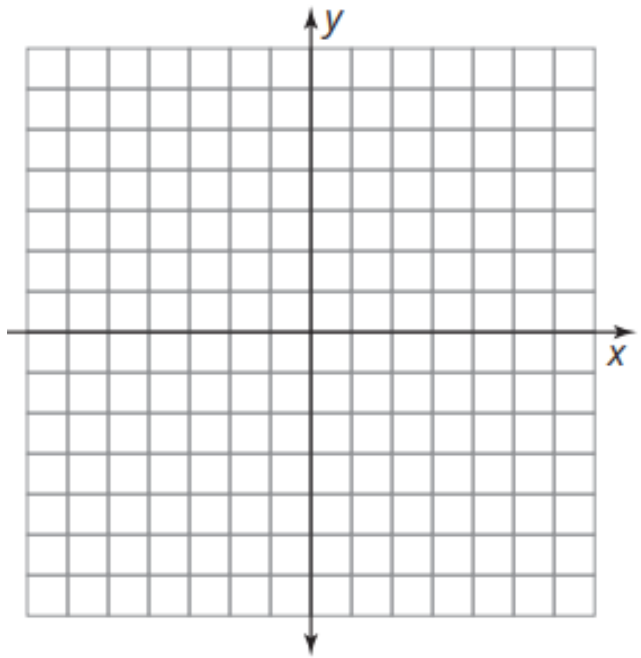
Identify all transformations being performed on $f(x) = -2|x| - 3$?

Graph the function.



Consider these absolute value functions.

$g(x) = |x|$ $m(x) = |x - 2|$ $n(x) = |x + 2|$



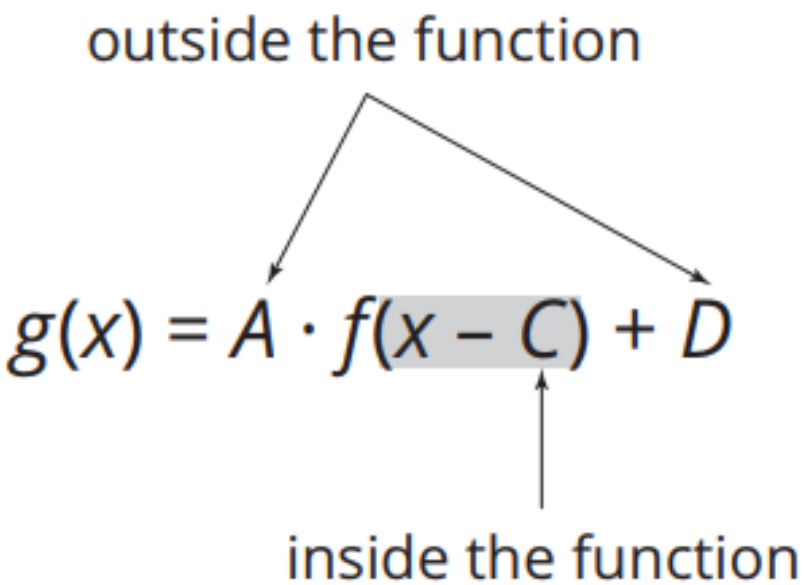
15. Use technology to graph each function. Then, sketch and label the graph of each function. Describe how $m(x)$ and $n(x)$ relate to $g(x)$.

The expression $x + C$ is the same as $x - (-C)$.

A function $t(x)$ of the form $t(x) = f(x - C)$ is a horizontal translation of the function $f(x)$. The value $|C|$ describes the number of units the graph of $f(x)$ is translated right or left. If $C > 0$, the graph is translated to the right. If $C < 0$, the graph is translated to the left.

16. Write the functions $m(x)$ and $n(x)$ in terms of the basic function $g(x)$. Describe how changing the C-value in the functions $m(x)$ and $n(x)$ horizontally translated the function $g(x)$.

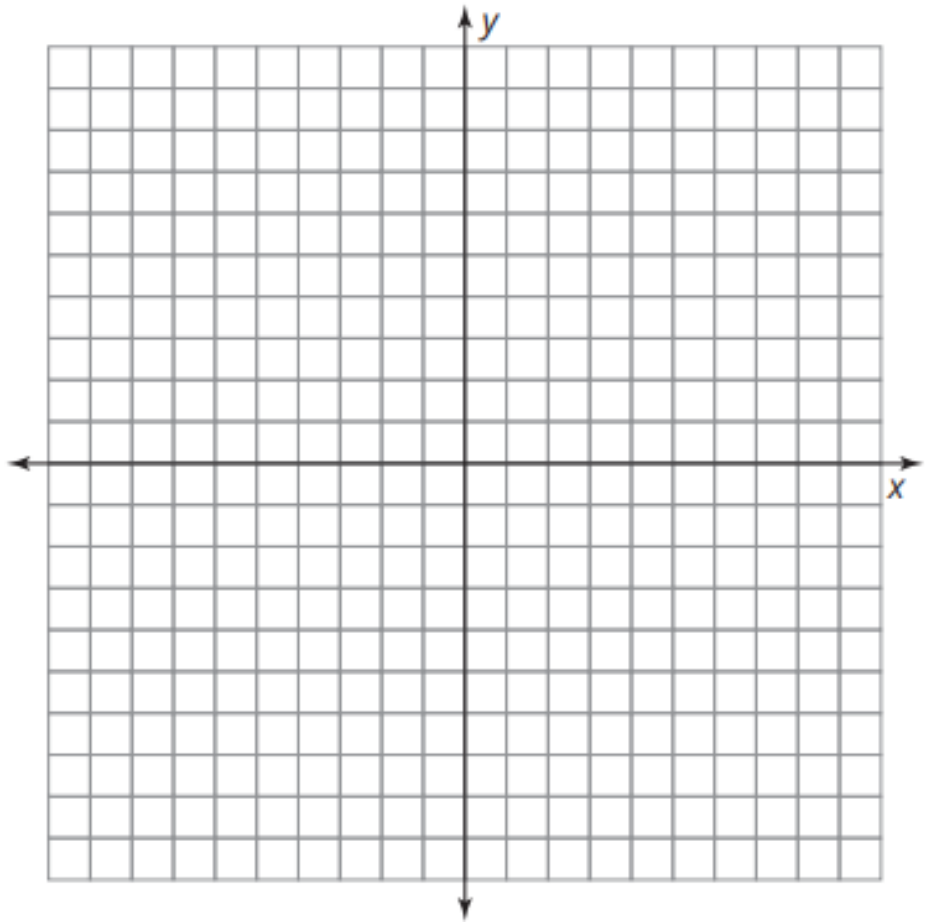
17. Use coordinate notation to show how each point (x, y) on the graph of $g(x)$ becomes a point on a graph that has been horizontally translated.



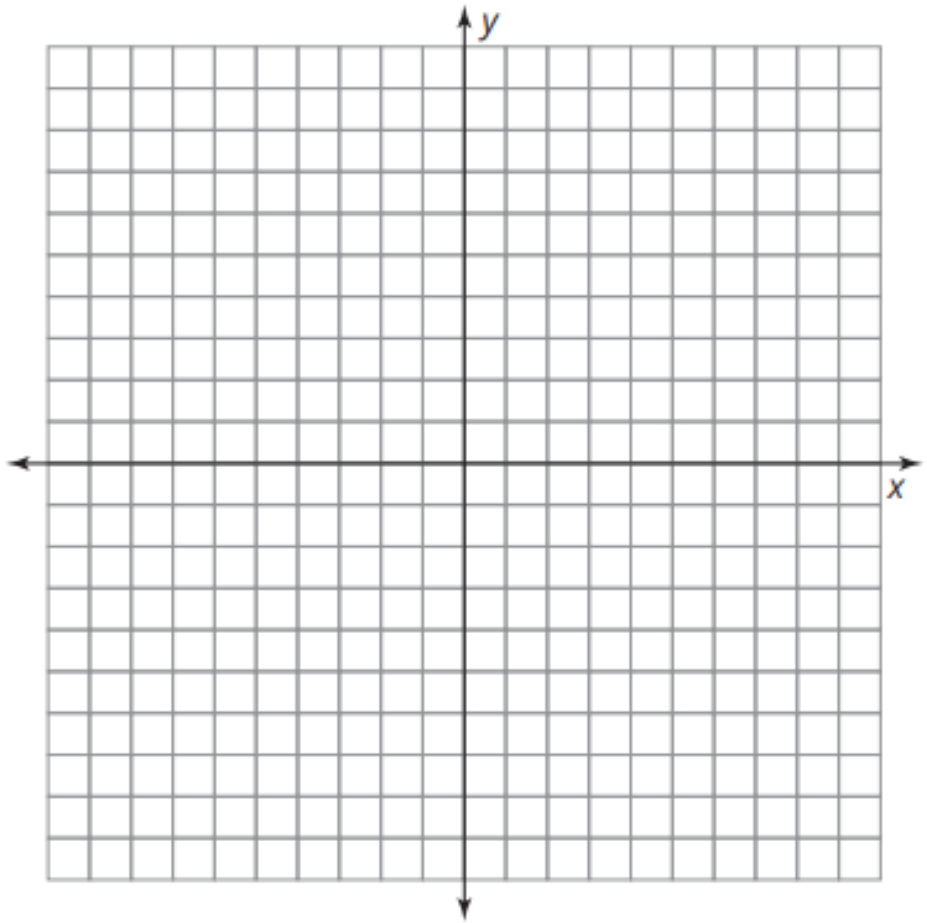
The **argument of a function** is the expression inside the parentheses.

For $y = f(x - C)$ the expression $x - C$ is the argument of the function.

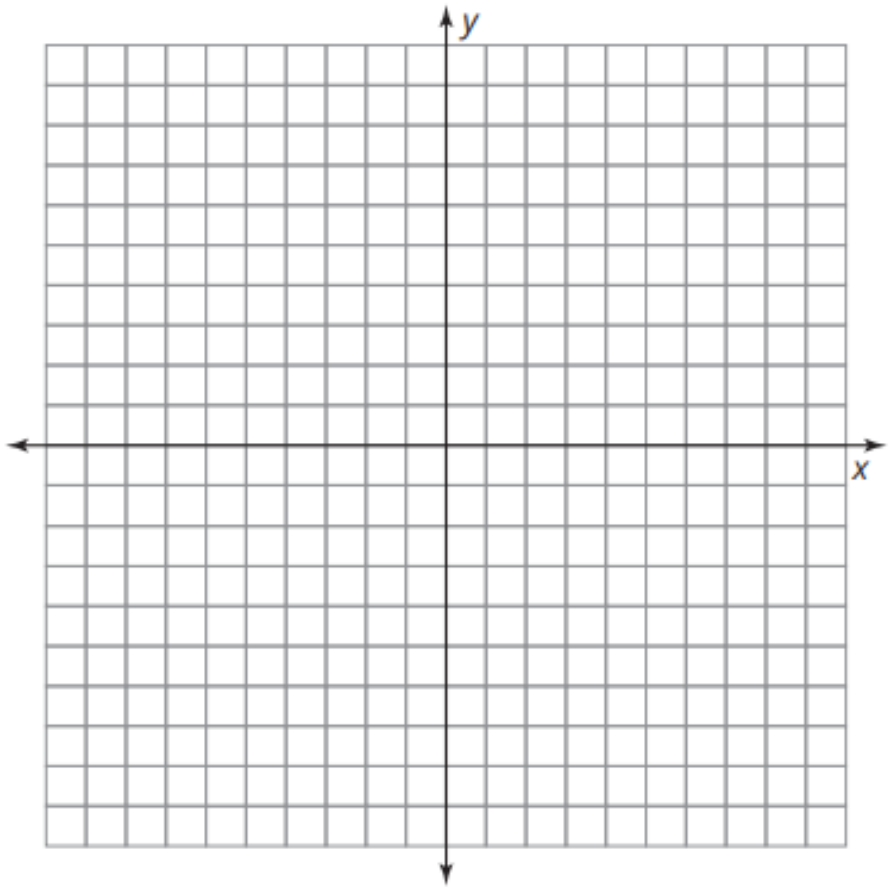
a. $m(x) = 2f(x - 1)$



b. $r(x) = \frac{1}{2}f(x + 2) - 2$



c. $w(x) = 2f(x + 3) + 1$



d. $v(x) = -2f(x + 3) + 1$