

1. Identify each transformation (or transformations) below. Be specific.

<i>Transformations:</i>		
HORIZONTAL TRANSLATION (Left or Right)	VERTICAL TRANSLATION (Up or Down)	VERTICAL REFLECTION
HORIZONTAL REFLECTION	HORIZONTAL DILATION (Stretch or Compress)	VERTICAL DILATION (Stretch or Compress)

a. $f(x) + 10$

b. $f(x - 3)$

c. $f(x + 8)$

d. $3f(x)$

e. $-f(x)$

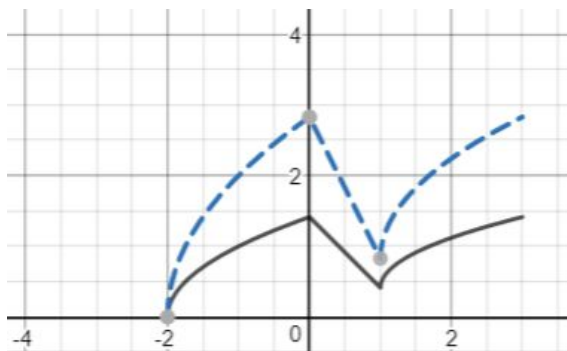
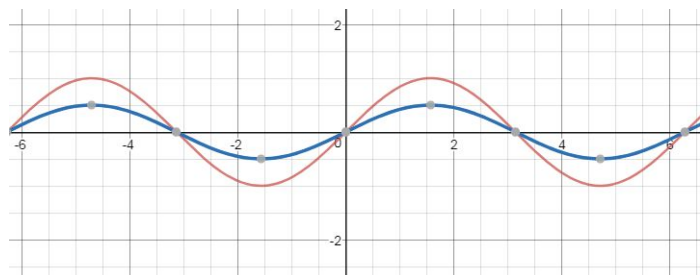
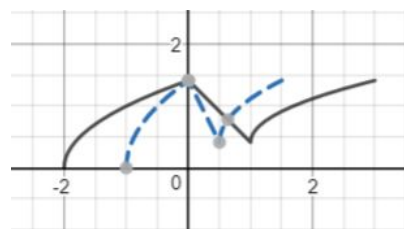
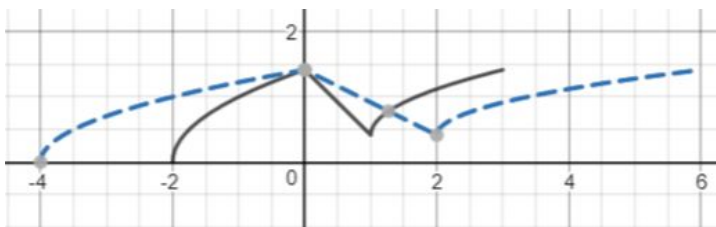
f. $f(0.5x)$


g. $f(-x)$

h. $f(2(x - 1))$

i. $f(x + 3) + 3$

2. Which image(s) below show a horizontal dilation and which show(s) a vertical dilation? How can you tell?



3. Let the Parent LINEAR Function be $g(x) = x$.
- Explain GRAPHICALLY why a vertical translation up 1 unit results in the same function as a horizontal translation left 1 unit.
 - Will a VERTICAL REFLECTION of $g(x) = x$ look differently than a HORIZONTAL REFLECTION of $g(x) = x$? Explain how you know.
 - Is $h(x) = 3x$ a VERTICAL or HORIZONTAL DILATION of $g(x) = x$? Explain how you know.
4.  Consider the Quadratic Function $n(x) = x^2 + 10x + 21$.
- Factor to show that $n(x) = (x + \#)(x + \#)$.
 - The VERTEX is halfway between the x-intercepts. Find the x- and y-coordinates of the vertex.
 - What transformation(s) on $f(x) = x^2$ result in $n(x)$? Be specific.
 - Evaluate $n(0)$. What does $n(0)$ tell you about the GRAPH of $n(x)$?
 - Find the VERTEX of $n(x + 1) - 3$.