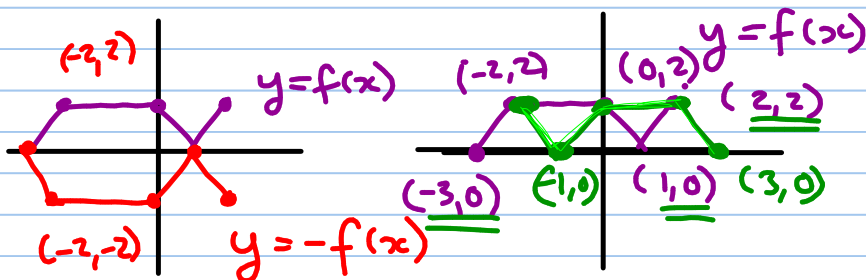


# Reflections and Stretches

REFLECTIONS → can be about either the x or y axis.

FOR EXAMPLE



$$(x, y) \rightarrow (x, -y)$$

$$y = f(-x)$$

$$(x, y) \rightarrow (-x, y)$$

INVARIANT POINTS → are points that do not change when you apply the transformation

for  $y=f(x) \rightarrow y=-f(x)$  is a reflection across the x-axis.

→ The invariant points will be points on the x-axis

for  $y=f(x) \rightarrow y=f(-x)$  is a reflection about the y-axis

→ The invariant points will be on the y-axis

## Stretches

Starting with  $y = f(x)$

Then:

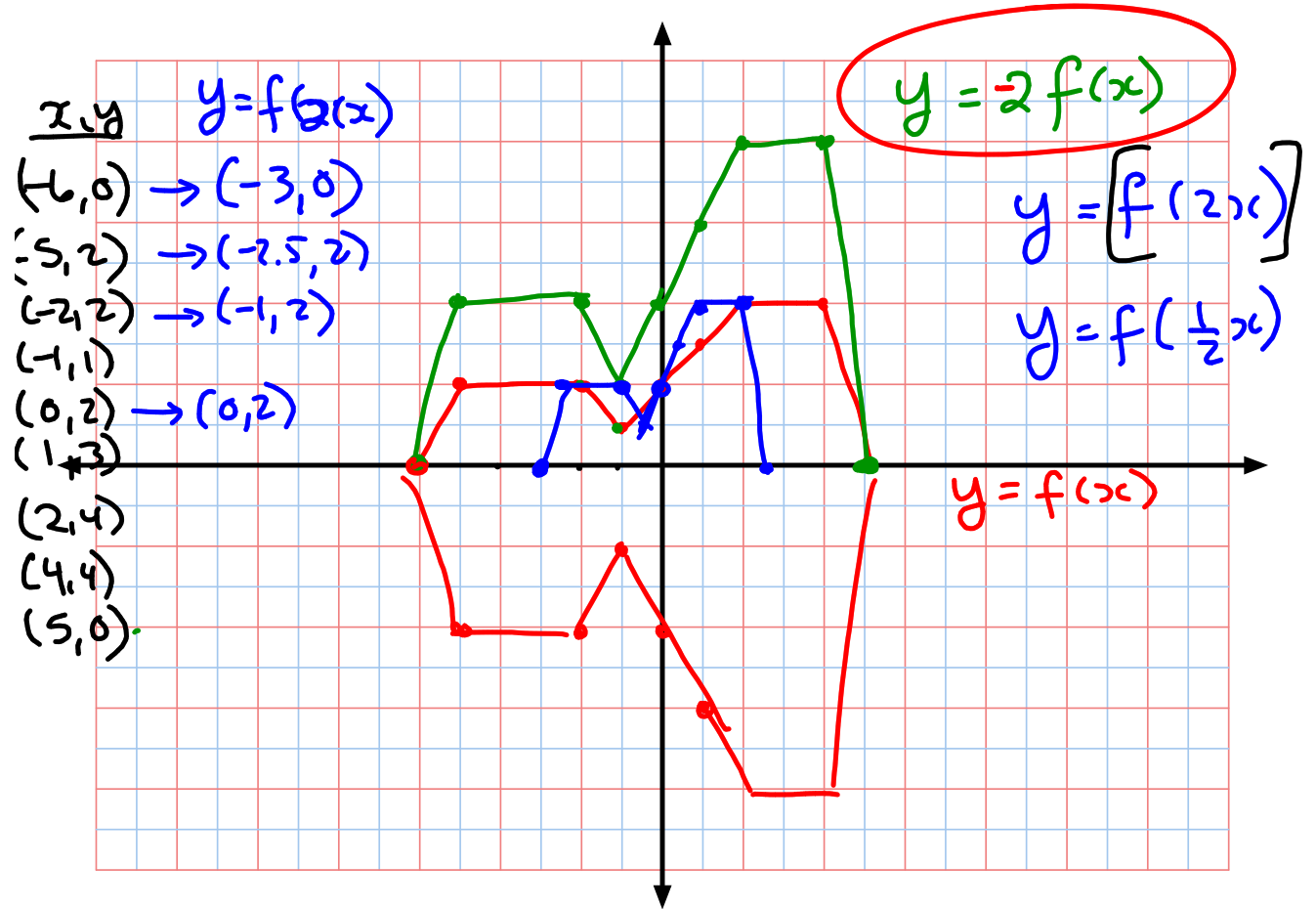
$y = af(x)$  is a vertical stretch  
ALL OF THE  $y$  VALUES GET MULTIPLIED  
BY  $a$

$$(x, y) \rightarrow (x, ay)$$

$y = f(bx)$  is a horizontal stretch

ALL OF THE  $x$  VALUES GET DIVIDED  
by  $b$

$$(x, y) \rightarrow \left(\frac{x}{b}, y\right)$$



Go ahead  
and do 1.2 ü

If you need graph  
paper, let me  
know...