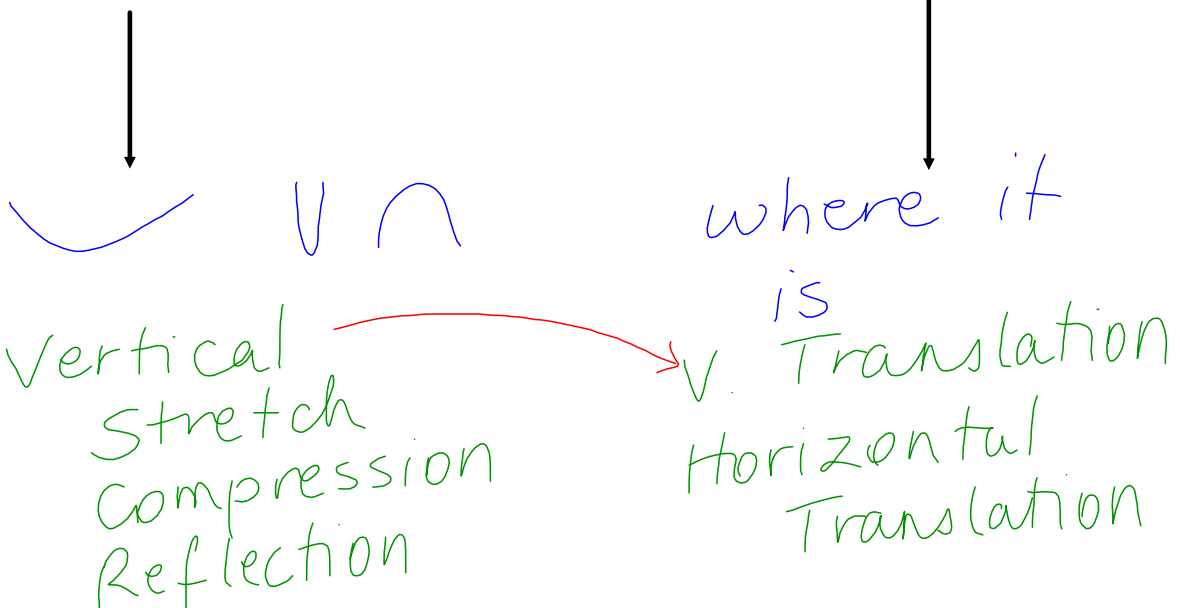


TRANSFORMATIONS

Learning Goal

- investigate transformations of parabolas

Transformation - operations performed on functions that change the **position** or **shape** of the original function



Vertex form of a quadratic equation is

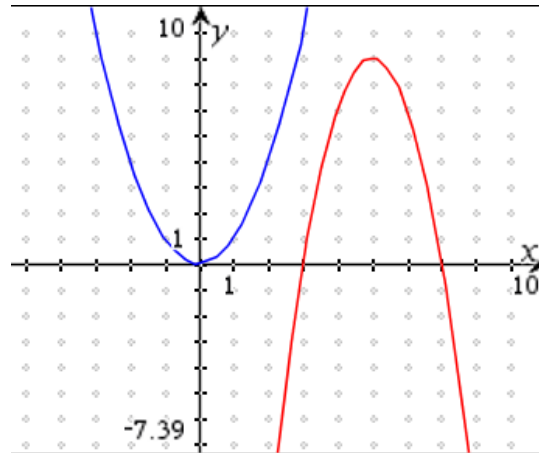
$$y = a(x-h)^2 + k$$

Basic

$$y = x^2$$

Transformed

$$y = -2(x-5)^2 + 8$$



The role of "a"

$$y = a(x-h)^2 + k$$

1. Use the TI-Nspire to graph each of the functions.
2. On the Boards...sketch and label on a single set of axis.

$$y = x^2$$

$$y = 2x^2$$

$$y = 5x^2$$

$$y = -2x^2$$

$$y = -7x^2$$

$$y = 0.5x^2$$

$$y = 0.1x^2$$

3. Describe the effect "a" has on the graph of $y = x^2$
4. Take a photo of the whiteboard for your notes.

The role of "k"

$$y=a(x-h)^2+k$$

1. Use the TI-Nspire to graph each of the functions.
2. On the Boards...sketch and label on a single set of axis.

$$y=x^2$$

$$y=x^2+3$$

$$y=x^2+7$$

$$y=x^2-5$$

$$y=x^2-8$$

Predict and
Check

$$y=2x^2-6$$

$$y=-3x^2+2$$

3. Describe the effect "k" has on the graph of $y=x^2$
4. Take a photo of the whiteboard for your notes.

The role of "h"

$$y=a(x-h)^2+k$$

1. Use the TI-Nspire to graph each of the functions.
2. On the Boards...sketch and label on a single set of axis.

$$y=x^2$$

$$y=(x+3)^2$$

$$y=(x+5)^2$$

$$y=(x-2)^2$$

$$y=(x-7)^2$$

Predict and
Check

$$y=0.5(x+3)^2$$

$$y=2(x-5)^2+7$$

3. Describe the effect "h" has on the graph of $y=x^2$
4. Take a photo of the whiteboard for your notes.

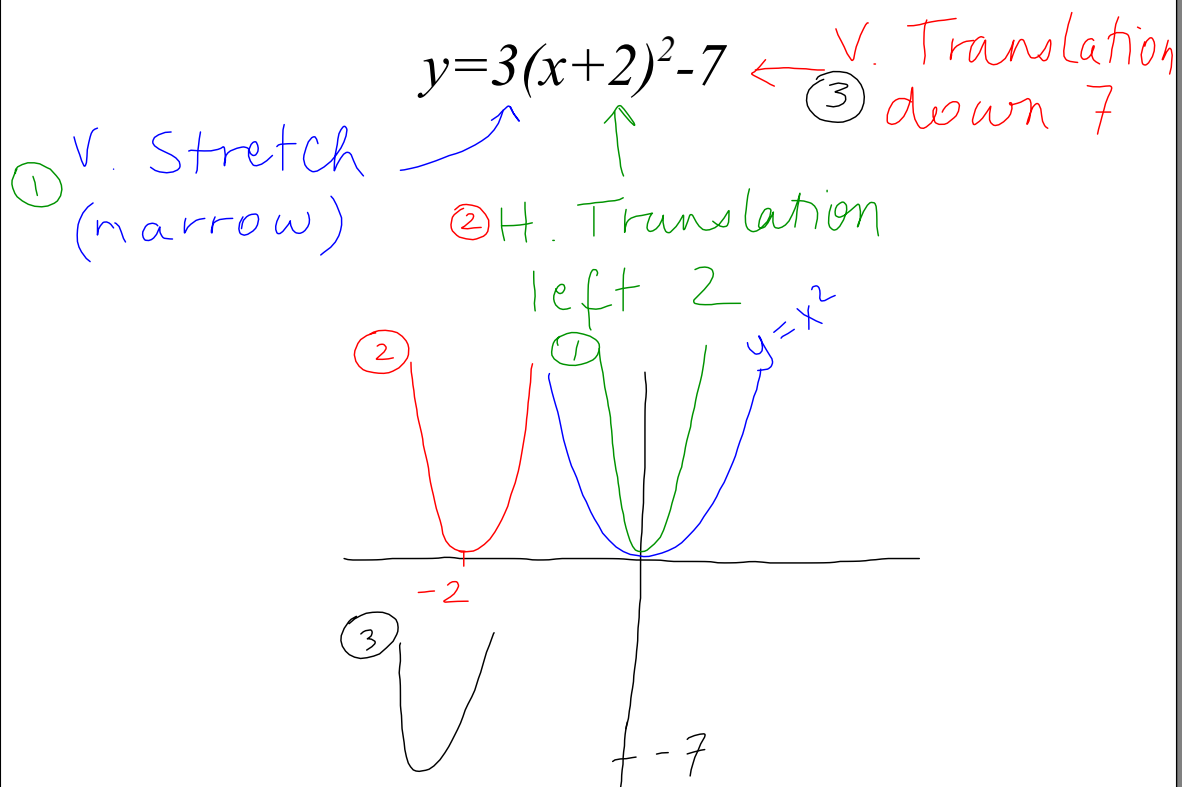
$$y = a(x-h)^2 + k$$

$a > 1$ Vertical Stretch
 $0 < a < 1$ Vertical Compression
 $a < 0$ Vertical Reflection

$h > 0$ Horizontal Translation left $(x+5)^2$
 $h < 0$ H. Translation right $(x-5)^2$

$k > 0$ V. Translation up
 $k < 0$ V. Translation down

Name all transformations and Sketch



HOMEWORK

PG. 190 # 1, 2, 4

PG. 200 # 1, 2