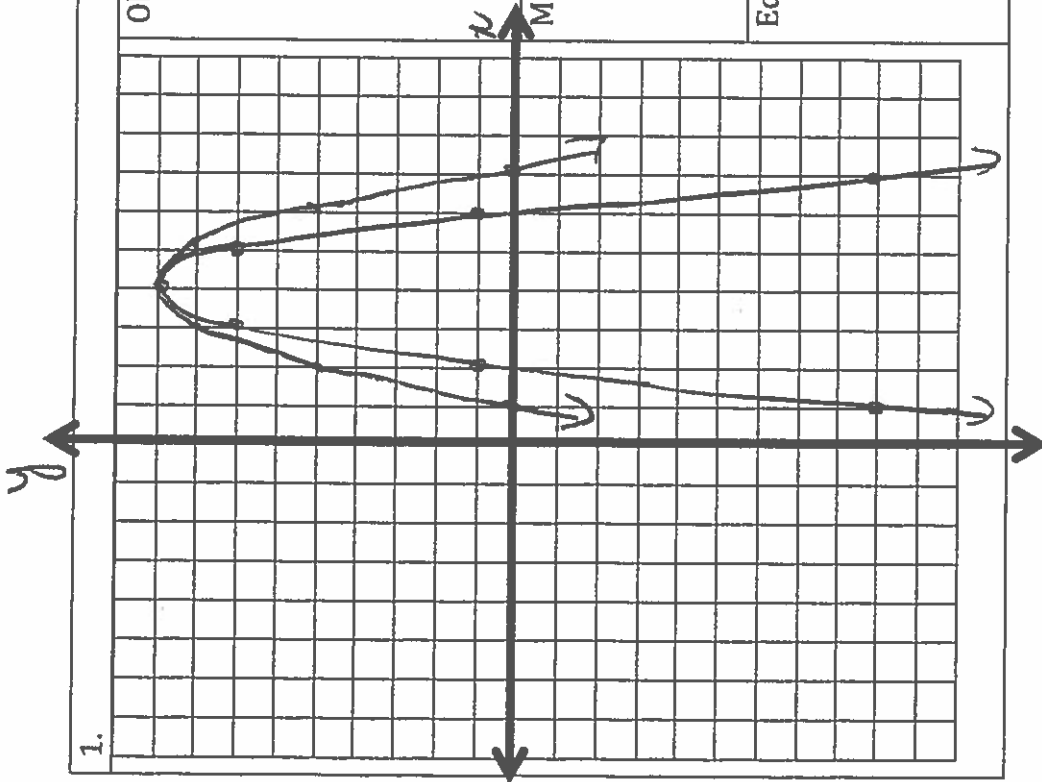


TRANSFORMATIONS OF A QUADRATIC FUNCTION



Observations:

- Opens down  $\rightarrow$  R in  $x$ -axis
- Vertex  $(4, 9) \rightarrow$  HT right by 4 units  
 $\rightarrow$  VT up by 9 units
- $a = -2 \rightarrow$  VSE by a factor of 2

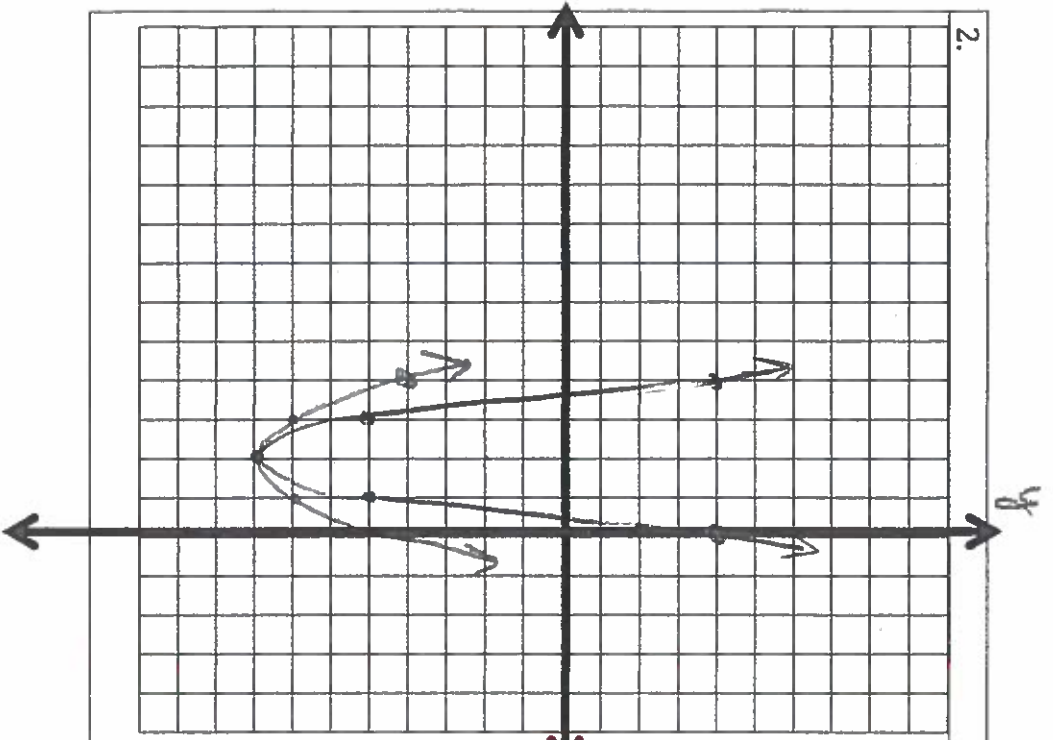
Mapping notation:

$$(x, y) \rightarrow (x + 4, -2y + 9)$$

Equation:

$$y = -2(x - 4)^2 + 9$$

2.



Observations:

- Opens up  $\Rightarrow$  No R in x-axis
- Vertex  $(-2, -8) \Rightarrow$  HT Left by 2 units  
 $\Rightarrow$  VT down by 8 units
- $a=3 \Rightarrow$  VSE by a factor of 2

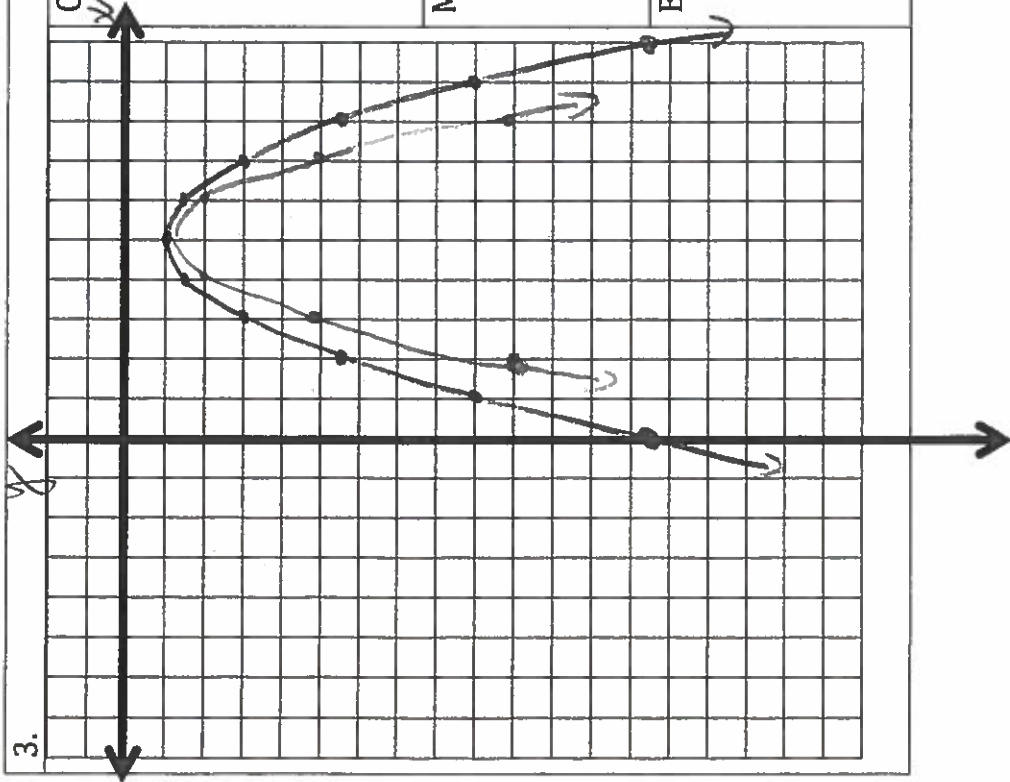
Mapping notation:

$$(x, y) \rightarrow (x-2, 3y-8)$$

Equation:

$$y = 3(x+2)^2 - 8$$

3.



Observations:

- Opens down  $\rightarrow$  R in the x-axis
- Vertex  $(5, -1) \rightarrow$  HT right by 5 units  
 $\rightarrow$  VT down by 1 unit
- $a = \frac{1}{2} \rightarrow$  VSC by a factor of  $\frac{1}{2}$

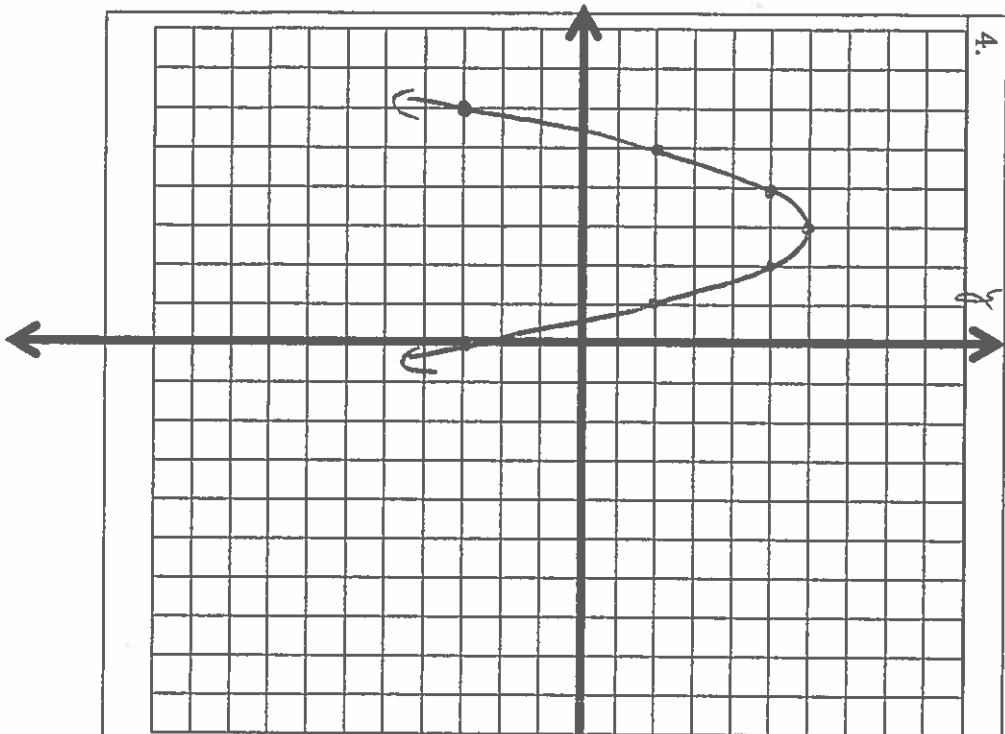
Mapping notation:

$$(x, y) \rightarrow (x + 5, -\frac{1}{2}y - 1)$$

Equation:

$$y = -\frac{1}{2}(x - 5)^2 - 1$$

4.



Observations:

- Opens down  $\rightarrow$  R in the x-axis
- Vertex  $(-3, 6) \rightarrow$  HT to the left by 3 units  
 $\rightarrow$  VT down by 1 unit
- $a = 1 \rightarrow$  No VS

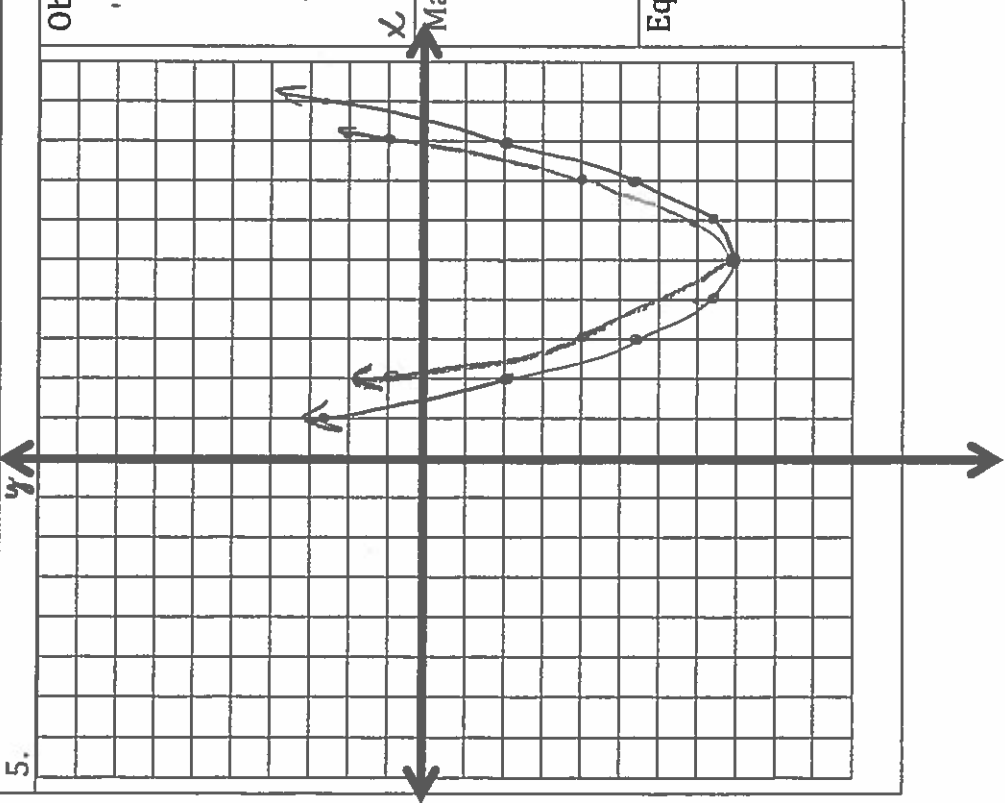
Mapping notation:

$$(x, y) \rightarrow (x - 3, y + 6)$$

Equation:

$$y = (x + 3)^2 + 6$$

5.



Observations:

- Opens up  $\rightarrow$  HT right by 5 units
- vertex:  $(5, -8)$   $\leftarrow$  VT down by 8 units
- $a = \frac{2}{3}$

Mapping notation:

$$(x, y) \rightarrow (x+5, \frac{2}{3}y-8)$$

Equation:

$$y = \frac{2}{3}(x-5)^2 - 8$$

$$a = \frac{2}{3}$$

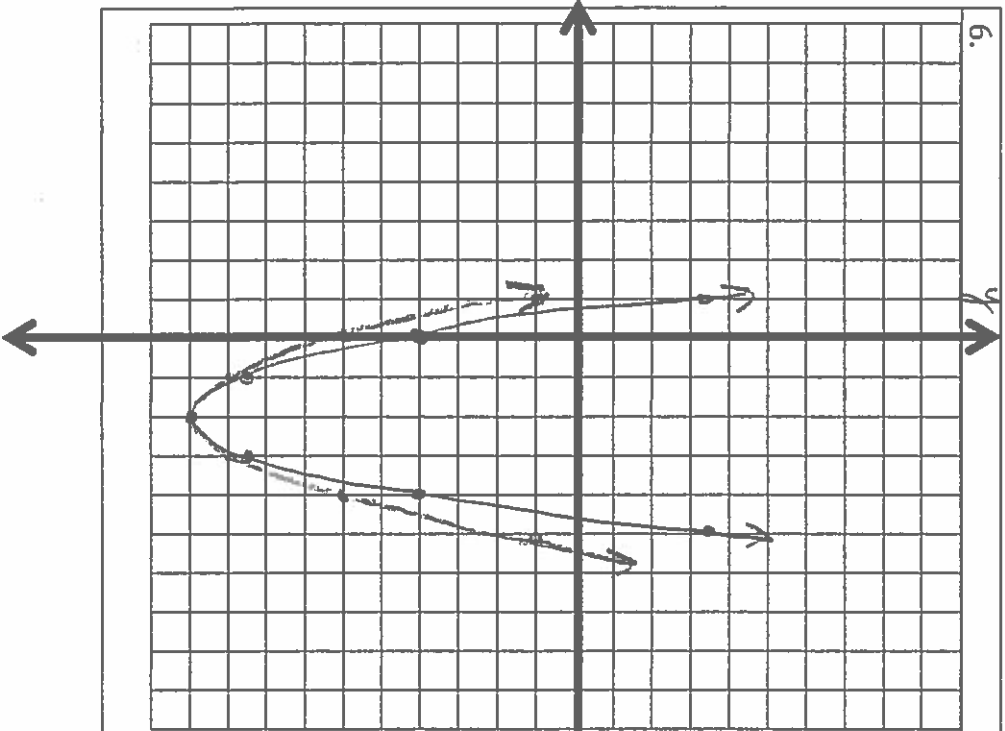
because

$$1 \rightarrow 0.\bar{6}$$

$$4 \rightarrow 2.\bar{6}$$

$$9 \rightarrow 6 \quad (9)(\frac{2}{3}) = \underline{\underline{6}}$$

6.



Observations:

- opens up
- vertex:  $(-2, -10)$ 
  - ↖ HT right by 2 units
  - ↘ VT down by 10 units
- $a = 1.5$

Mapping notation:

$$(x, y) \rightarrow (x + 2, 1.5y - 10)$$

Equation:

$$y = 1.5(x - 2)^2 - 10$$