

## 1.2 Day 2

Tell your partner how the graph was transformed

①  $y = (x - 2)^2 + 3$

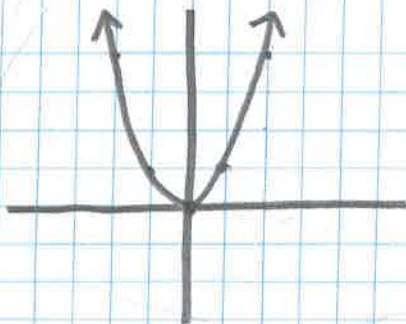
translated right 2, up 3

②  $y = -|x + 5| - 1$

reflected over x-axis

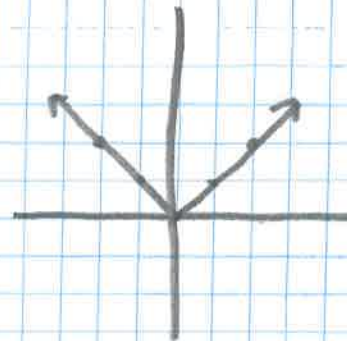
translated left 5, down 1

$f(x) = x^2$



| over | up |
|------|----|
| 1    | 1  |
| 2    | 4  |

$f(x) = |x|$



| over | up |
|------|----|
| 1    | 1  |
| 2    | 2  |

Transformed Equation:

$$y = a \left( \frac{x - h}{b} \right)^2 + k$$

$$y = a \left| \frac{x - h}{b} \right| + k$$

$(h, k)$ : vertex

$h$ : horizontal translation

$k$ : vertical translation

$a$ : vertical dilation

$b$ : horizontal dilation



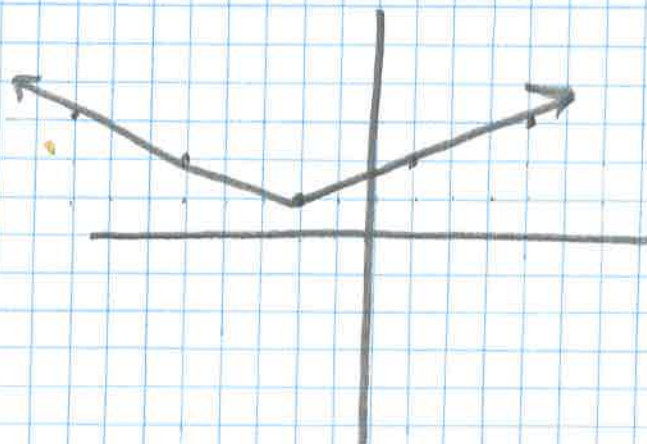
# ORDER MATTERS

- 1) Dilations
- 2) Reflections
- 3) Translations

DRT

~~TRD~~

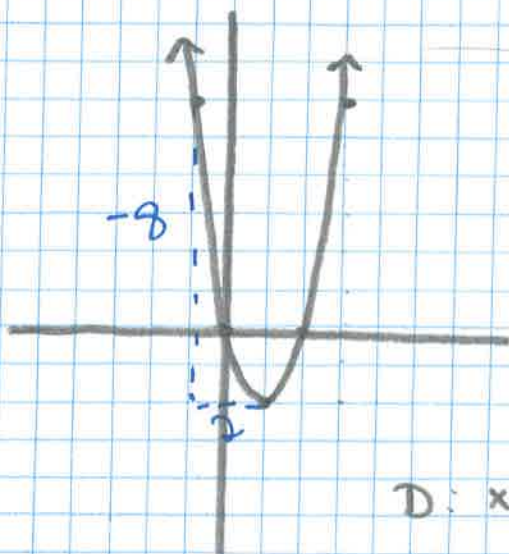
4)  $n(x) = \left| \frac{x+2}{3} \right| + 1$



HD of 3  
translation 2 left  
1 up

| over      | up |
|-----------|----|
| 3 = 3 · 1 | 1  |
| 6 = 3 · 2 | 2  |

5)  $h(x) = 2(x-1)^2 - 2$



VD of 2  
translated right 1,  
and down 2

| over | up        |
|------|-----------|
| 1    | 1 · 2 = 2 |
| 2    | 4 · 2 = 8 |

Avg rate of change  $x \in (-1, 1)$   
-4

D:  $x \in \mathbb{R}$

R:  $y \in [-2, \infty)$

V:  $(1, -2)$

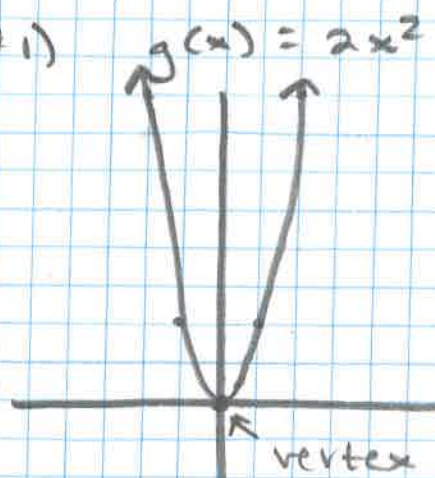
$h(x) > 0$   $x \in (-\infty, 0) \cup (2, \infty)$

$h(x) < 0$   $x \in (0, 2)$

L.O.S:  $x = 1$

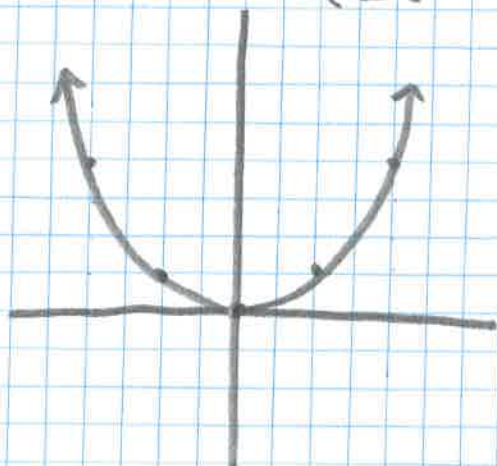


#1)



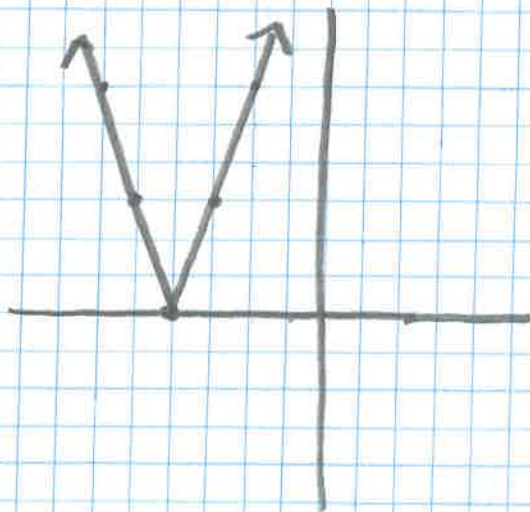
Vertical dilation of 2

| over | up              |
|------|-----------------|
| 1    | $1 \cdot 2 = 2$ |
| 2    | $4 \cdot 2 = 8$ |

#2)  $k(x) = \left(\frac{x}{2}\right)^2$ 

Horizontal dilation of 2

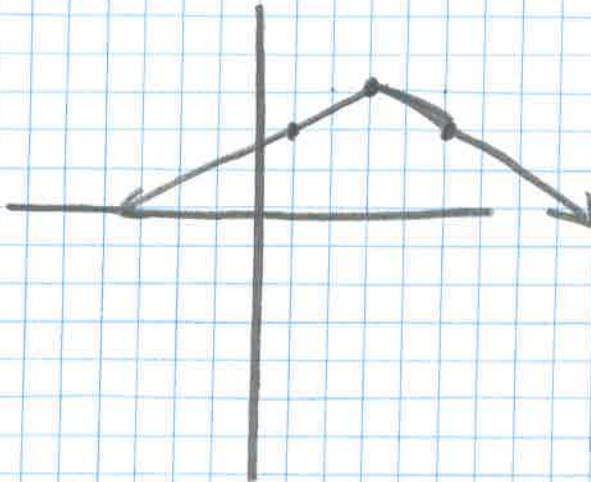
| over            | up |
|-----------------|----|
| $2 = 2 \cdot 1$ | 1  |
| $4 = 2 \cdot 2$ | 4  |

#3)  $m(x) = 3|x + 4|$ vertical dilation of 3  
translated left 4

| over | up              |
|------|-----------------|
| 1    | $1 \cdot 3 = 3$ |
| 2    | $2 \cdot 3 = 6$ |



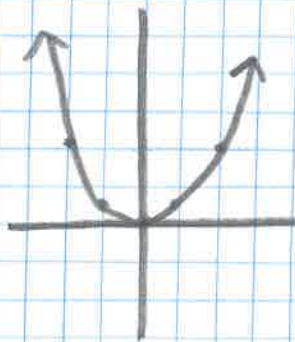
⑥



$$y = -\frac{1}{2}|x-3| + 3$$

$$y = -\left|\frac{x-3}{2}\right| + 3$$

$$y = \frac{1}{2}x^2$$



$\neq$

$$y = \left(\frac{x}{2}\right)^2$$

