period 6

Transformations Notes & Examples Packet

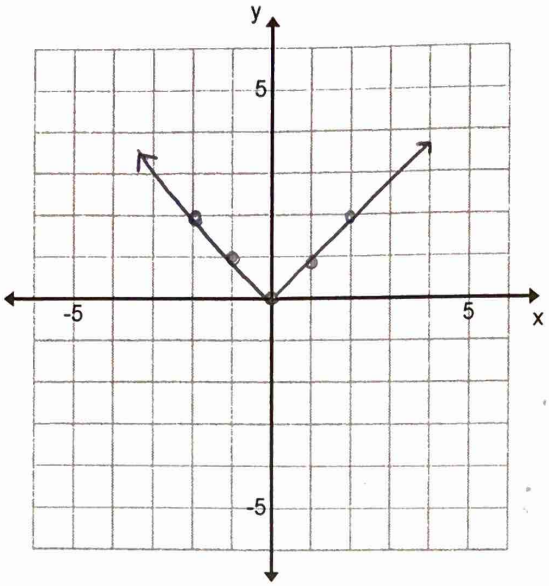
Parent Functions:

$f(x) = |x|$

x	y
-2	2
-1	1
0	0
1	1
2	2

absolute value

V-Shaped



D: $(-\infty, \infty)$

R: $[0, \infty)$

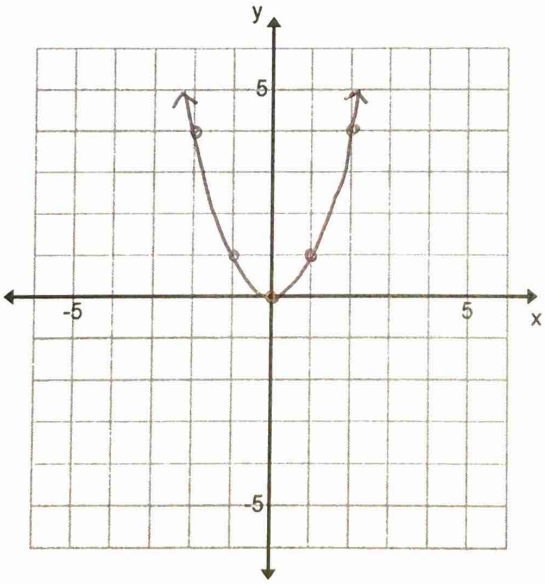
vertex: $(0,0)$

$f(x) = x^2$

x	y
-2	4
-1	1
0	0
1	1
2	4

parabola, quadratic

U-shaped



D: $(-\infty, \infty)$

R: $[0, \infty)$

vertex: $(0,0)$

Definitions

Translation:

Reflection:

Transformation:

All Transformations Note Sheet

$$f(x)=a\cdot|b(x-h)|+k \qquad g(x)=a\cdot(b(x-h))^2+k$$

a:

b:

*__h__: left & right movement
ex: $y=|x-4| \rightarrow R4$

__k__: up & down movement
ex: $y=x^2+7 \rightarrow U7$

Writing Equations Given Transformations

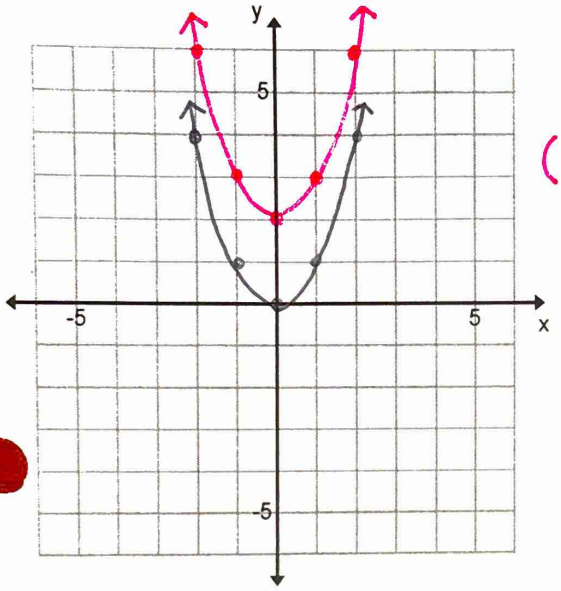
Parent Function	$y=x^2$	$y=\|x\|$	$f(x)$
Translations -Left 2 units -Down 3 units			
Reflection across the x-axis			
Reflection across the y-axis			
Vertical Dilation by a factor of 4			
Horizontal Dilation by a factor of 3			

Notes:

always dilations | reflections 1st

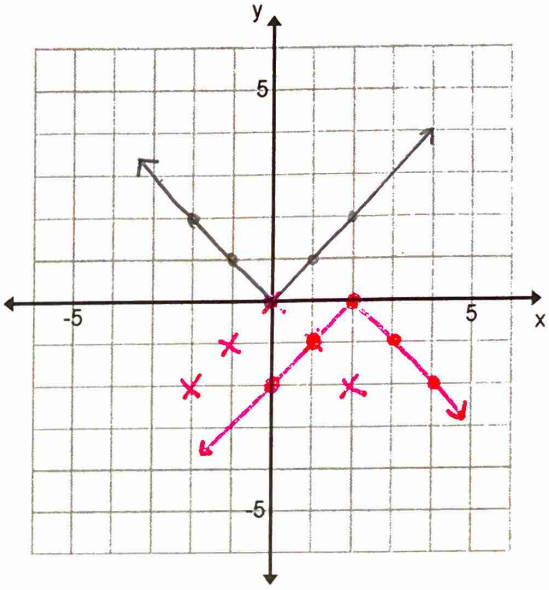
Examples:

1. $f(x) = x^2 + 2$ ← U2 → final



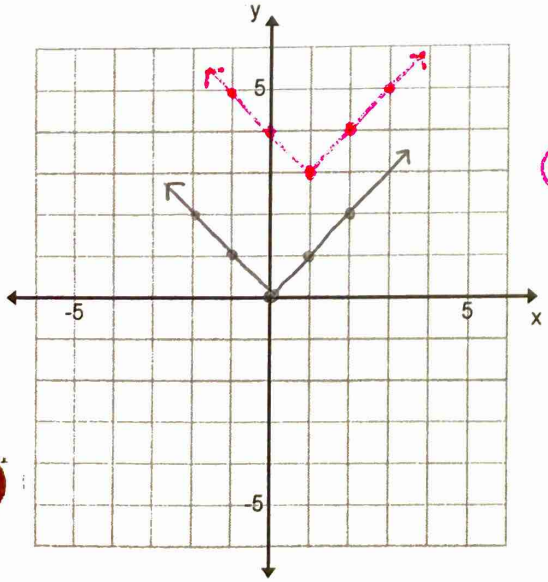
(0,2)

2. $f(x) = -|x-2|$ over x-axis ← R2



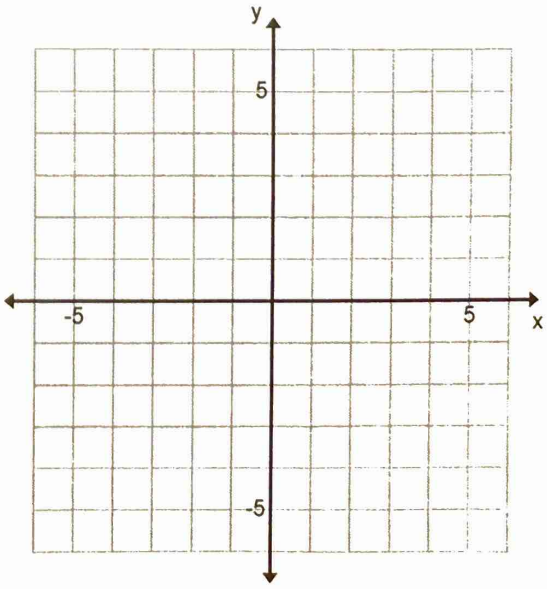
3. $f(x) = |x-1| + 3$

R1 ↗ ↖ U3

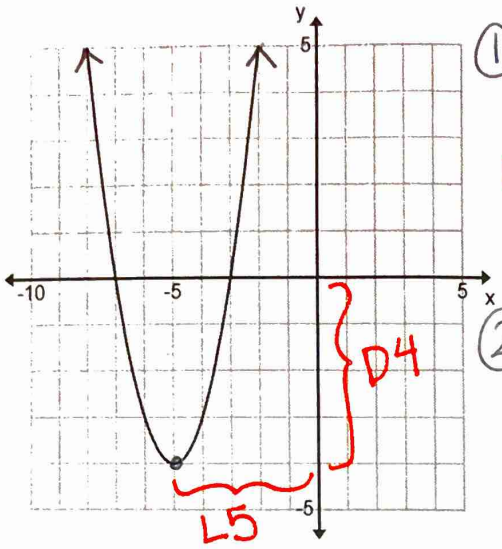


(1,3)

4. $f(x) = (x+3)^2 - 4$



5. Write the equation of the graph



① parent function

$y = x^2$

② movement (vertex!)

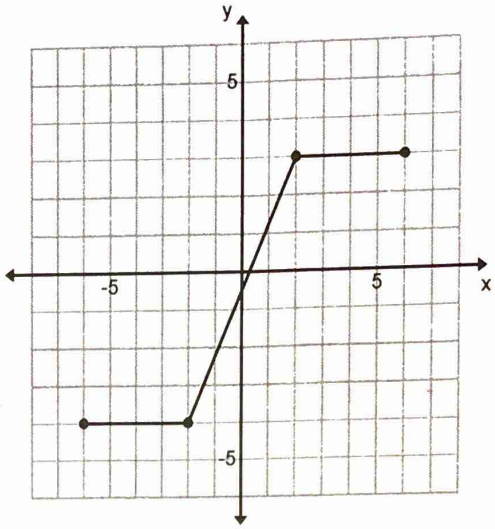
L5, D4

$\boxed{y = (x+5)^2 - 4}$

6. Given the graph, do the following transformations in different colors

a. $f(x+2)$

b. $f(-x)+3$



7. Write the equation for each transformation.

a. Translate the graph of $f(x) = x^2$ up 10 units and right 3 units

b. Translate the graph of $f(x) = |x|$ down 4 units and left 2 units

c. Translate $f(x)$ right 4 units, down 2 units and reflect it over the x-axis.