Transformations Review

Transformations

Type	Key Words	Rules
Translation Iso	left, right, up, down	Translation in the x Direction: left x−, right x+ Translation in the y Direction: up y+, down y−
Reflection Iso	flip, mirror	X - axis: (x, −y) y - axis: (−x, y) y = x: (y, x) y = −x: (−y, −x)
Rotation Iso	"around origin"	90C/270CC: (y, −x) 180c/cc: (−x, −y) 270c/90cc: (−y, x) 360c/cc: (x, y)
Dilation Nope	stretch	Resulting image is same shape, but not same size

Isometry: transformation in which the preimage and image are congruent!

Compositions:

Ex1) Describe each algebraic rule by giving the two transformations it describes.

$(x + 2, -y)$ translate right 2, Reflect x-axis

$2(-x, y)$ dilate by 2, Reflect y-axis

$\frac{1}{3}(y, -x)$ dilate by $\frac{1}{3}$, Rotate 90°c/270°cc

$(-(y + 6), x)$ translate up 6, Rotate 270°c/90°cc

Ex2) Reflect the image on the right over the line, then rotate it clockwise 90°.

A.

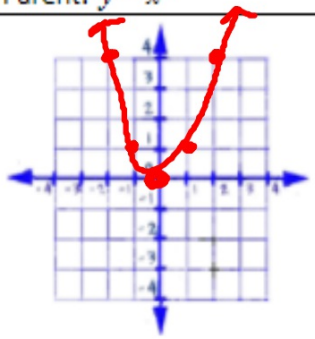
B.

C.

D.

Graphing

Quadratics		
Parent: $y = x^2$	Transformations:	Other Notes:



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

a: stretch/compress
(-) reflections

h: translate
left/right
★ opposite ★

K: translate
up/ down

Writing equations in vertex form:
Complete the square!

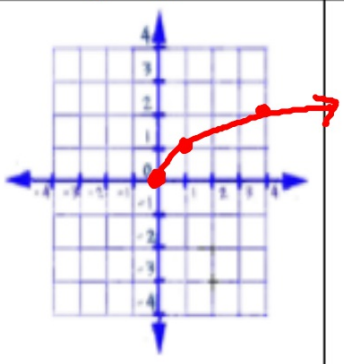
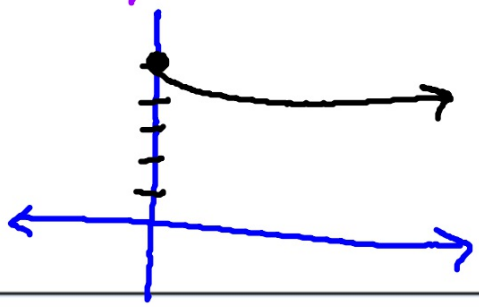
Ex: $y = x^2 - 6x + 10$

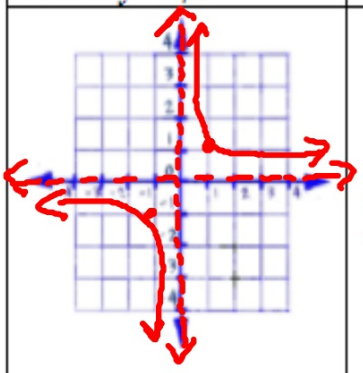
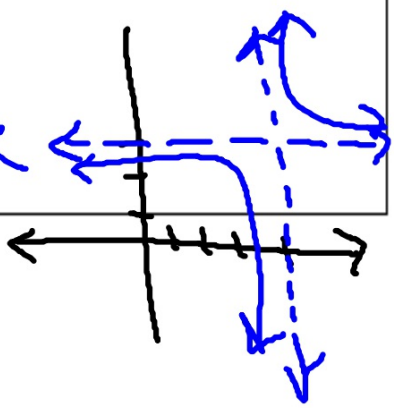
$\frac{-6}{2} = (-3)^2 = 9$

$y = (x-3)^2 + 1$

"give the bank one"

right 3
up 1

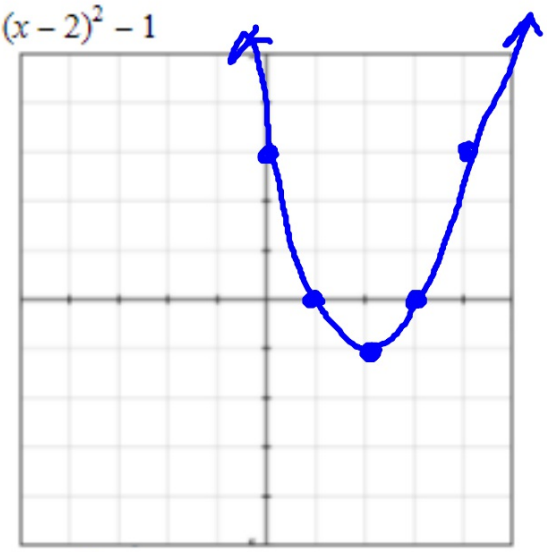
Square Root Functions		
Parent: $y = \sqrt{x}$	Transformations:	Other Notes:
	$y = a\sqrt{x-h} + k$ * a, h, k same as above	Example: $-\frac{1}{3}\sqrt{x} + 5$ Reflect over x-axis Compress by $\frac{1}{3}$ up 5 

Rational Functions		
Parent: $y = 1/x$	Transformations:	Other Notes:
	$y = \frac{a}{x-h} + k$ ~~a~~, h, k same as above vertical asymptote $x = h$ horizontal asymptote $y = k$	Example: $y = \frac{1}{x-4} + 3$ Translate right 4, up 3 V.A @ $x = 4$ H.A @ $y = 3$ 

Mixed Review Problems

Graph the Parabola

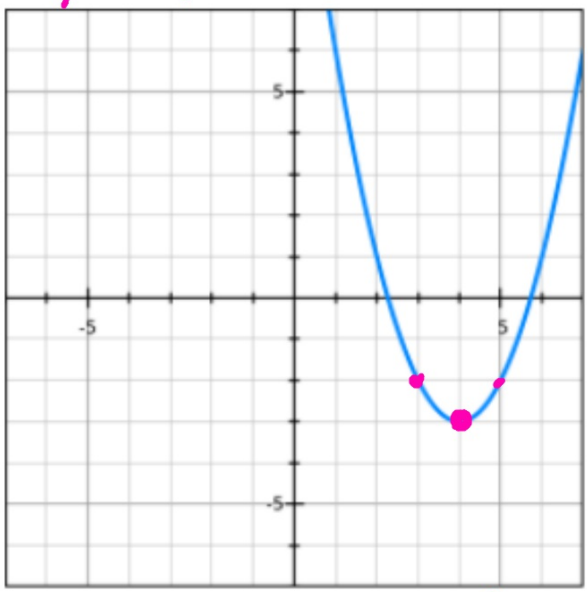
$y = (x - 2)^2 - 1$



Right 2
down 1

Write the Equation in Vertex Form

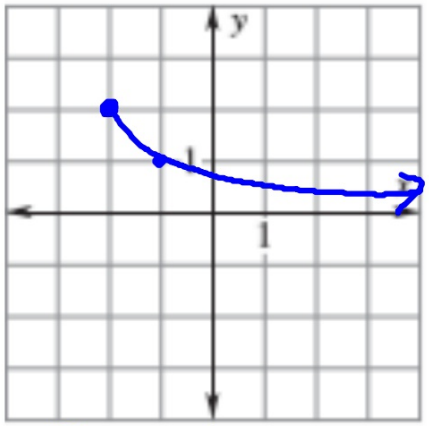
$y = (x-4)^2 - 3$



Right 4, down 3

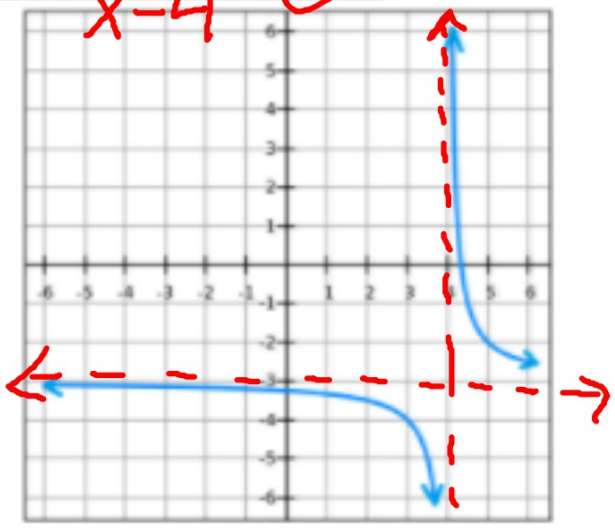
List the transformations and Draw the graph or Write the Equation

$f(x) = -\sqrt{x+2} + 2$



Reflect over x-axis
left 2
up 2

$y = \frac{1}{x-4} - 3$



Right 4
down 3