

### Function Family Graphic Organizer

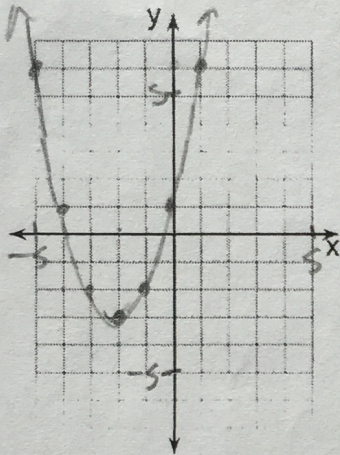
Function Family: Quadratic (Parabolic) Parent Graph Table

Parent Function:  $y = x^2$

Equation of Transformed Function (Graphing Form):

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

Sketch of Transformed Graph:  $y = (x+2)^2 - 3$



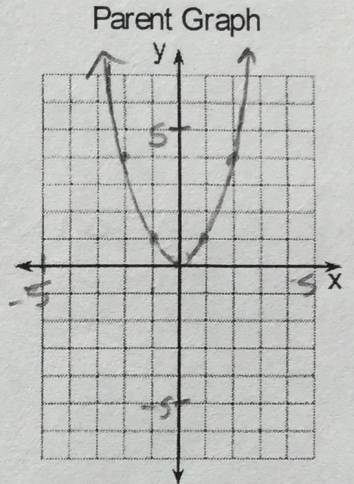
The locator point (h, k) is: The vertex

Attributes:

(shape, symmetry, domain and range, maximum and minimum points, etc.)

- Parabola
- Symmetry across  $x = -2$
- Domain:  $\mathbb{R}$
- Range:  $y \geq -3$
- Minimum  $(-2, -3)$
- Vertex  $(-2, -3)$

x	y
-3	9
-2	4
-1	1
0	0
1	1
2	4
3	9



### Function Family Graphic Organizer

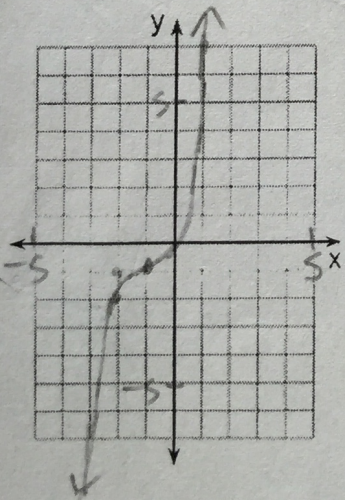
Function Family: Cubic

Parent Function:  $y = x^3$

Equation of Transformed Function (Graphing Form):

$$y = a(x-h)^3 + k$$

Sketch of Transformed Graph:  $y = (x+1)^3 - 1$



The locator point (h, k) is: Point of Inflection

Attributes:

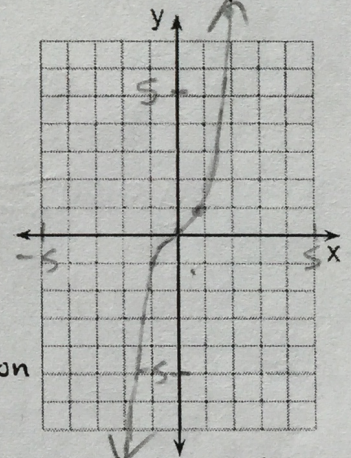
(shape, symmetry, domain and range, maximum and minimum points, etc.)

- Cubic
- Rotational symmetry about  $(-1, -1)$
- Domain:  $\mathbb{R}$
- Range:  $\mathbb{R}$
- Point of inflection  $(-1, -1)$

Parent Graph Table

x	y
-3	-27
-2	-8
-1	-1
0	0
1	1
2	8
3	27

Parent Graph



Function Family Graphic Organizer

Function Family: *Absolut Value*

Parent Function:  $y = |x|$

Equation of Transformed Function (Graphing Form):

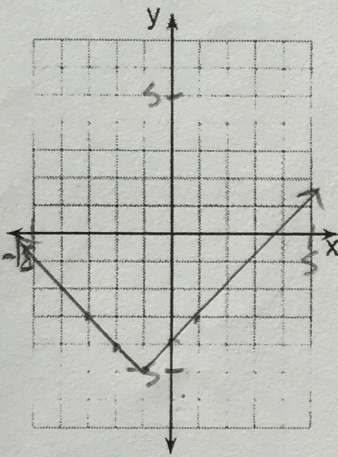
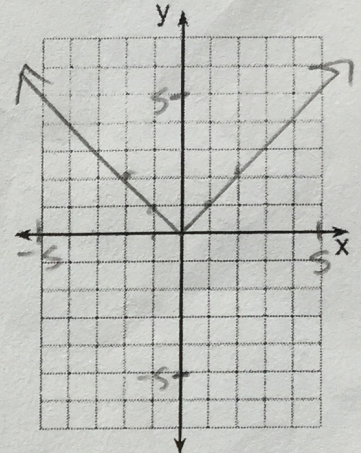
$$y = a|x-h| + k$$

Sketch of Transformed Graph:  $y = |x+1| - 5$

Parent Graph Table

x	y
-3	3
-2	2
-1	1
0	0
1	1
2	2
3	3

Parent Graph



The locator point (h, k) is:

*vertex*

Attributes:

(shape, symmetry, domain and range, maximum and minimum points, etc.)

- absolute value "V" shape
- symmetry across  $x = -1$
- domain:  $\mathbb{R}$
- Range:  $y \geq -5$
- Vertex:  $(-1, -5)$
- Minimum:  $(-1, -5)$

Function Family Graphic Organizer

Function Family: *Square Root*

Parent Function:  $y = \sqrt{x}$

Equation of Transformed Function (Graphing Form):

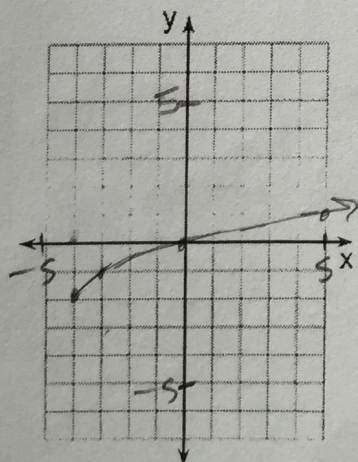
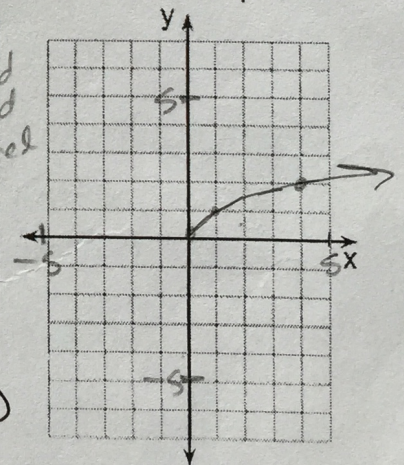
$$y = a\sqrt{x-h} + k$$

Sketch of Transformed Graph:  $y = \sqrt{x+4} - 2$

Parent Graph Table

x	y
-3	undefined
-2	undefined
-1	undefined
0	0
1	1
2	$\sqrt{2}$
3	$\sqrt{3}$

Parent Graph



The locator point (h, k) is: *"Endpoint"*  
(not academic vocab.)

Attributes:

(shape, symmetry, domain and range, maximum and minimum points, etc.)

- Square root
- Domain:  $x \geq -4$
- Range:  $y \geq -2$
- Endpoint  $(-4, -2)$
- Minimum:  $(-4, -2)$

Function Family Graphic Organizer

Function Family: Rational (Hyperbolic)

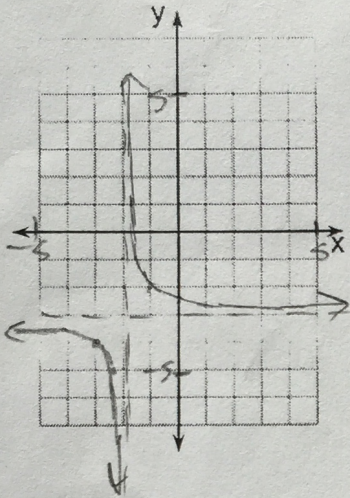
Parent Function:  $y = \frac{1}{x}$

Equation of Transformed Function (Graphing Form):

$$y = a \left( \frac{1}{x-h} \right) + k$$

Sketch of Transformed Graph:

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



The locator point (h, k) is: center

Attributes:

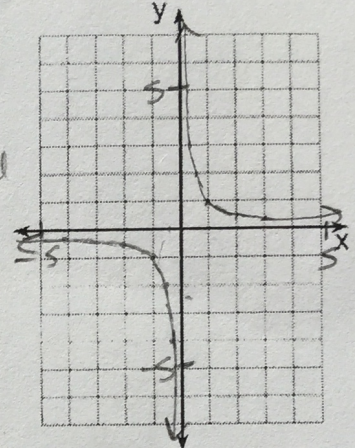
(shape, symmetry, domain and range, maximum and minimum points, etc.)

- hyperbola
- rotational symmetry about (-2, -3)
- Center (-2, -3)
- Domain  $x \neq -2$
- Range  $y \neq -3$
- asymptotes:  
 $y = -3$  &  $x = -2$

Parent Graph Table

x	y
-3	$-\frac{1}{3}$
-2	$-\frac{1}{2}$
-1	-1
0	undefined
1	1
2	$\frac{1}{2}$
3	$\frac{1}{3}$

Parent Graph



Function Family Graphic Organizer

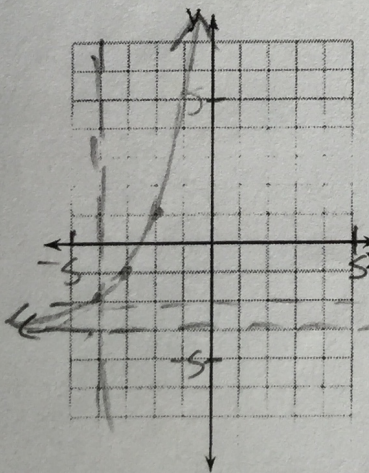
Function Family: Exponential

Parent Function:  $y = 2^x$

Equation of Transformed Function (Graphing Form):

$$y = a \cdot b^{(x+h)} + k$$

Sketch of Transformed Graph:  $y = 2^{(x+4)} - 3$



The locator point (h, k) is:

Attributes:

(shape, symmetry, domain and range, maximum and minimum points, etc.)

- Exponential curve
- Domain:  $\mathbb{R}$
- Range  $y > -3$
- asymptote  $y = -3$
- (0, 13)
- $y = h + 1$

Parent Graph Table

x	y
-3	$\frac{1}{8}$
-2	$\frac{1}{4}$
-1	$\frac{1}{2}$
0	1
1	2
2	4
3	8

Parent Graph

