

10/2/15  
9/30/15

# # 12 Parent Functions

## lines

Parent Function

$$y = x$$

\* graph

Linear graph

\* Equations

x to the first power

## Parabolas

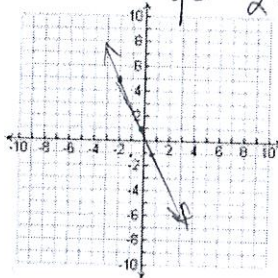
Parent Function

$$y = x^2$$

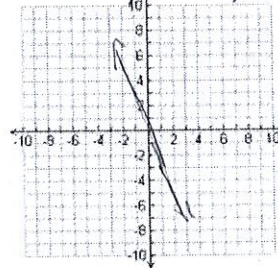
\* Graph parabolic or U shaped

\* Equation has  $x^2$  as the highest power

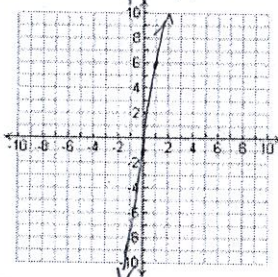
Equation: #  $y = -2x + 1$



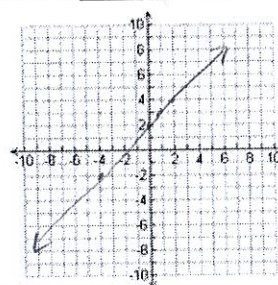
Equation: #  $y = -3x$



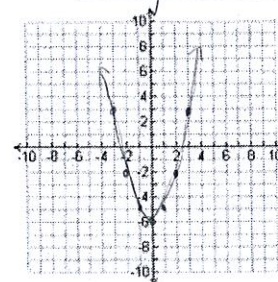
Equation: #  $y = 7x - 1$



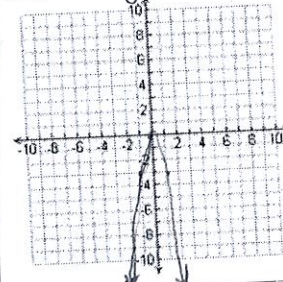
Equation: #  $y = x + 2$



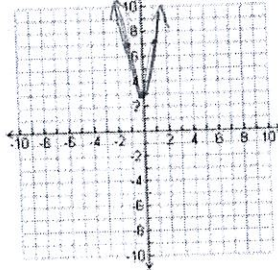
Equation: #  $y = x^2 - 6$



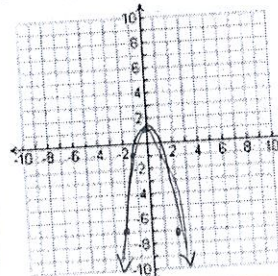
Equation: #  $y = -3x^2$



Equation: #  $y = x^2 + 3$



Equation: #  $y = -2x^2 + 1$



# Exponentials

Growth

Decay

$$y = b^x$$

$$y = b^x$$

$$b > 1$$

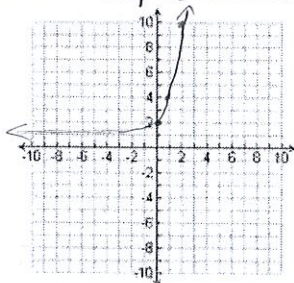
$$b < 1$$

Graphs are

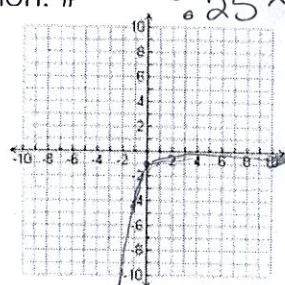
"L" shaped

Equation has  
x in exponent

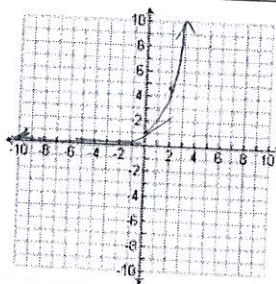
Equation: #  $y = 3^x + 1$



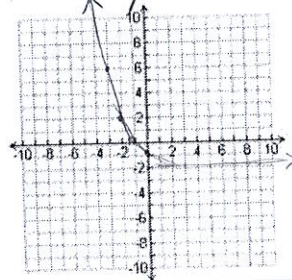
Equation: #  $y = 0.25^x$



Equation: #  $y = 2 \cdot 1^x$



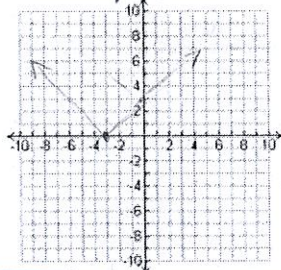
Equation: #  $y = 0.5^x - 2$



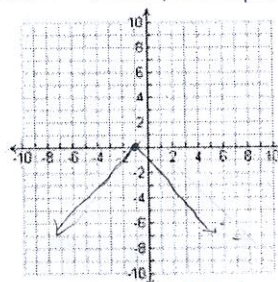
# Absolute Value

Parent Function  $y = |x|$

Equation: #  $y = |x + 3|$



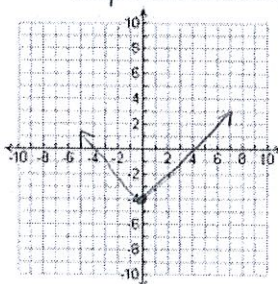
Equation: #  $y = -|x + 1|$



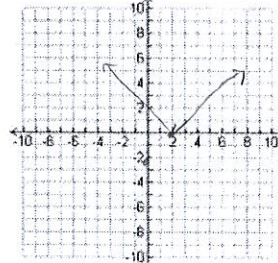
Graph is "V" shaped

Equation must  
have x in  
absolute value

Equation: #  $y = |x| - 4$



Equation: #  $y = |x - 2|$



**Math 2 Functions**

Graph parent functions.

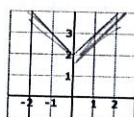
Name: \_\_\_\_\_

Using your new knowledge and WITHOUT a calculator, please make predictions about the following:

1. Explain what the graph of  $y = -4x^2$  will look like. Be specific.

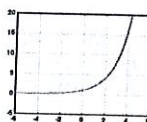
downward opening parabola, narrow opening  $x^2$

2. What do you know about the equation of the following graph?



V shaped abs value graph

3. What can you say about the equation of the following graph?



"L" shaped exponential graph

4. What should I look for in an equation if I want a straight line?

line equation with  $x$  to the first

5. Why do you think this activity is called Function Families Investigation?

We learned about the family of the parent functions.

6. What do you think the math term 'parent function' means?

Simplest or most basic of each family

$y = x$ ,  $y = |x|$ ,  $y = 2^x$   
 $y = x^2$