7.5 Parent Functions

Warm-Up Friday

Write the equations of as many parent functions as you can remember. Then write your name on & turn in your warm-ups!

About Me

1. Would you rather be the smartest person or the most attractive person?

2. Would you rather be a doctor or a lawyer?

Concavity: curved line

up down

Symmetry:

- Rotational
- across y-axis

Increasing/Decreasing:

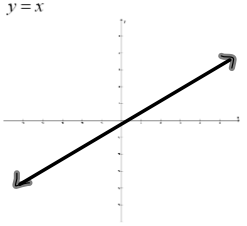
"positive slope" up

"negative slope" down

Parent Functions:

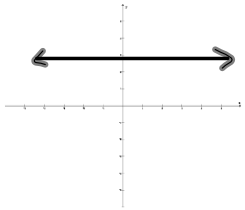
Linear

$y = x$



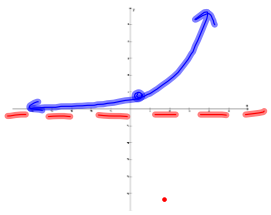
Constant

$y = b$ ex. #



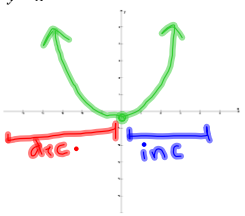
Exponential

$y = a^x$ ex. $y = 2^x$



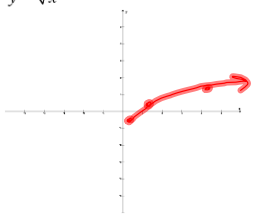
Quadratic

$y = x^2$



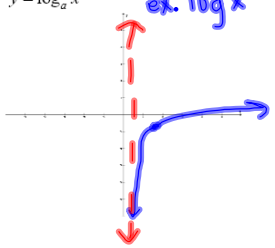
Square Root

$y = \sqrt{x}$



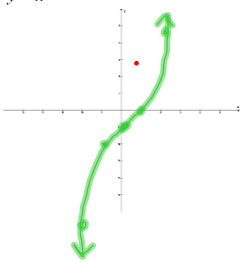
Logrithmic

$y = \log_a x$ ex. $\log x$



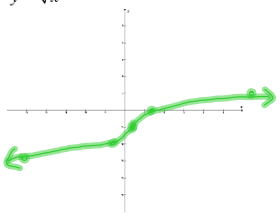
Cubic

$y = x^3$



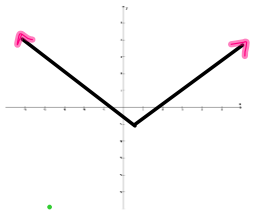
Cube Root

$y = \sqrt[3]{x}$



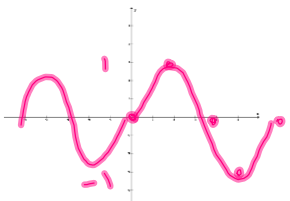
Absolute Value

$y = |x|$



Sine

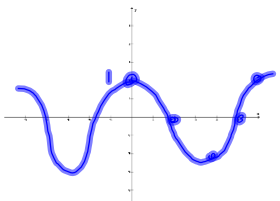
$y = \sin x$



Rotational

Cosine

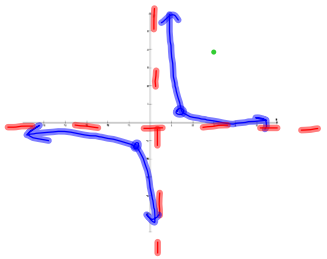
$y = \cos x$



over y-axis

Rational (Fraction)

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



Transformations:

f(-x) Reflects over y-axis

-f(x) Reflects over x-axis

f(x) + a (outside) UP or DOWN

f(x - a) (inside) LEFT (+) or RIGHT (−)

2f(x)

$\frac{1}{2}f(x)$

f(2x)

$f(\frac{1}{2}x)$

stretch / compression

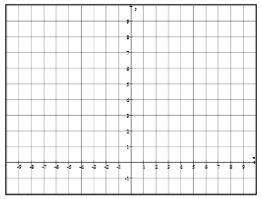
Practice – Parent Functions **pp 67,69**

Name_____ Date_____ Period _____

Plot the points and decide which Parent Function best fits the given table of values.

1. The data in the table below shows the height of a ball being thrown. Plot the points and determine the name and the equation of the parent function that best represents the data.

time	height
0	3
1	5.1
3	6.9
4	6.6
7	.9

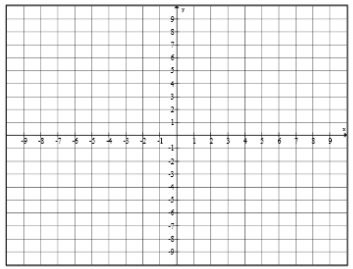


Parent Function Name:

Parent Function Equation:

2.

x	y
-1	7
1	5
3	3
4	4
6	6

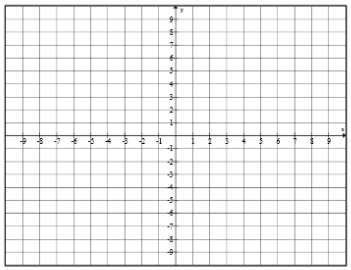


Parent Function Name:

Parent Function Equation:

3.

x	y
-3	1
-2	2
1	3
6	4



Parent Function Name:

Parent Function Equation:

List all Parent Functions that meet the following criteria:

4. Increasing on the interval $(0,\infty)$: _____

5. Range is $(-\infty,\infty)$: _____

6. Has rotational symmetry: _____

7. Is symmetrical about the line $x = 0$: y-axis _____

8. Has no concavity: _____

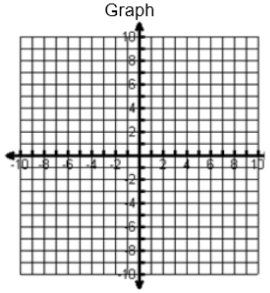
9. The Constant Parent Function is given by the equation $y = c$, where c is any real number. Complete the following table of information for this parent function. **Hint: pick a value of c to help you.**

Name	
Equation	
Domain	Range
Increasing	Decreasing
as x → ∞, f(x) → __	as x → −∞, f(x) → __
Concavity	Symmetry

Critical Points

x	y

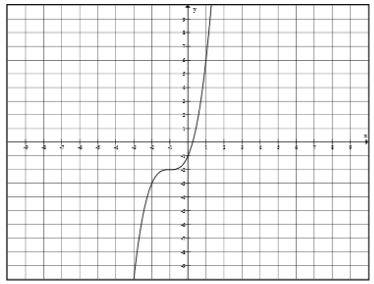
Graph



9b. Is $x = c$ a function? Why or why not?

Determine the Parent Function of each graph and describe the changes that were made to the Parent Function to create the new graph.

10.

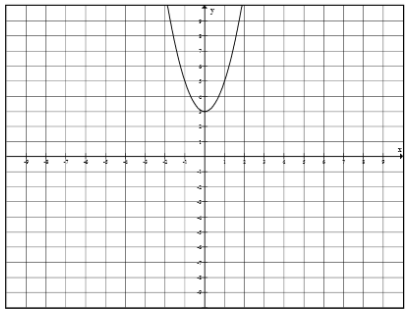


Parent Function:_____

Changes: _____

_____

11.



Parent Function:_____

Changes: _____

_____

Equation: _____

12. Compare and contrast the Linear Parent Function and the Cube Root Parent Function.

Similarities: _____

Differences: _____