AGS 3 Name: ______________________ Period: _____ Date: __________

Notes 3.2 – Graphing Polynomials

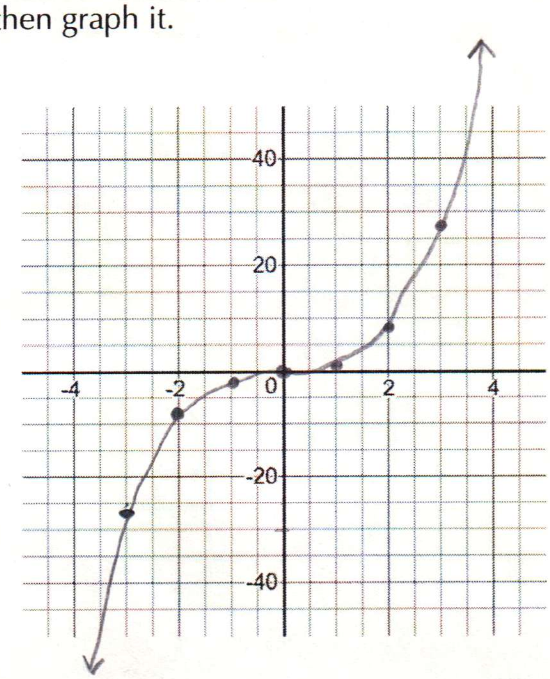
Warmup – Simplify each expression

1.	$(6x+3)+(4x+5)$	2.	$(x+17)+(9x-13)$	3.	$(7x-8)+(-2x+9)$
	$10x+8$		$10x+4$		$5x+1$
4.	$(4x+9)-(x+2)$	5.	$(-3x-1)-(2x+5)$	6.	$(8x+3)-(-10x-9)$
	$3x+7$		$-5x-6$		$18x+12$
7.	$(3x-7)+(-3x-7)$	2.	$(-5x+8)-(-5x+7)$	3.	$(8x+9)-(7x+9)$
	-14		1		x

Investigation

a. Create a table for the function $f(x)=x^3$, then graph it.

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



b. Give the features of the function $f(x)=x^3$.

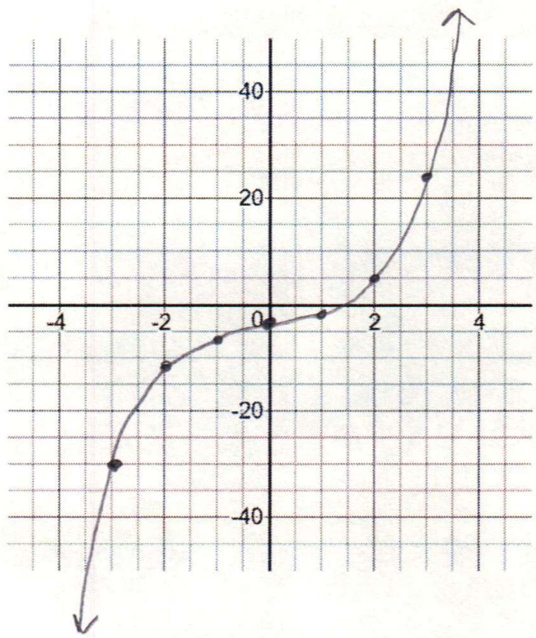
domain: $\mathbb{R}$ x-int: (0,0) cubic

range: $\mathbb{R}$ y-int: (0,0) inc: $\mathbb{R}$

c. Using the parent function $(x) = x^3$, and your knowledge of transformation from the last unit and last year, graph each function below.

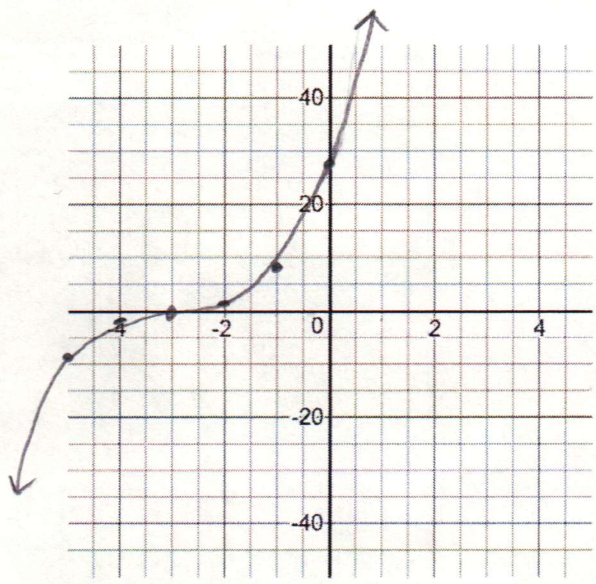
$f(x) = x^3 - 3$

Transformation: down 3



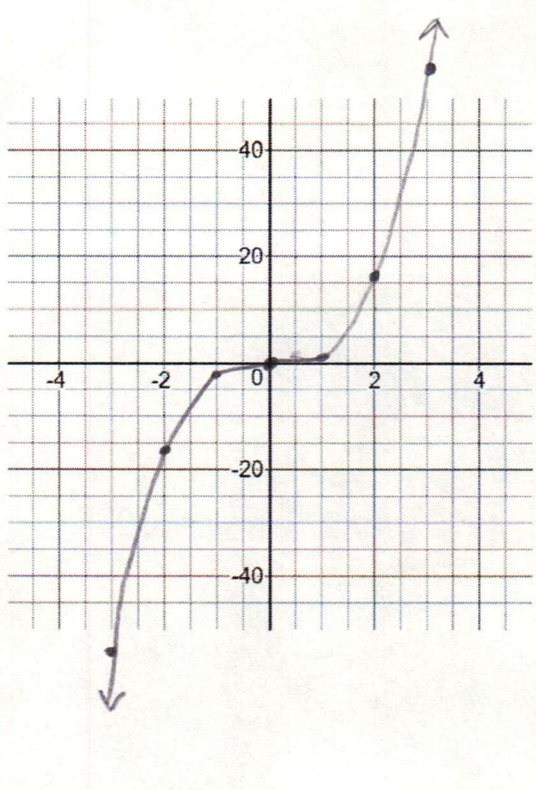
$f(x) = (x + 3)^3$

Transformation: Left 3



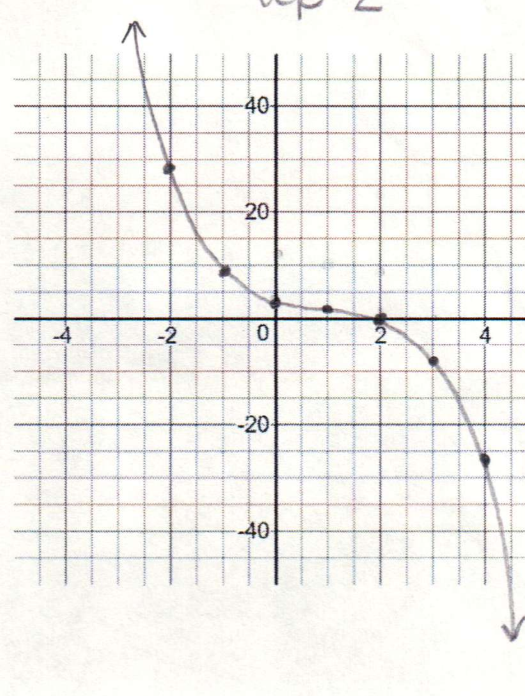
$f(x) = 2x^3$

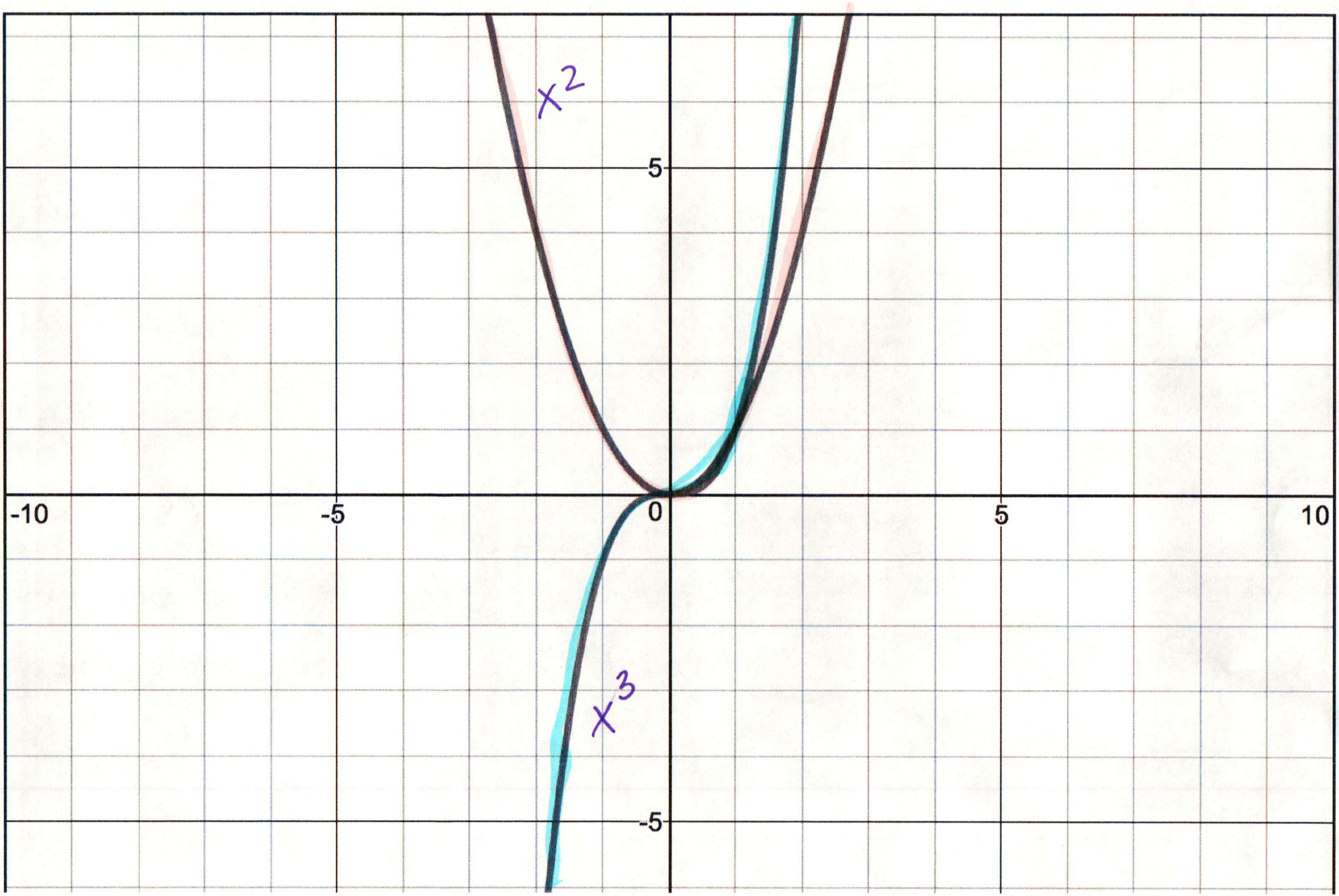
Transformation: stetch x 2



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

Transformations: reflect
right 1
up 2





x^2
5
-10
-5
0
5
10
x^3
-5

d. List the similarities you see between $f(x) = x^3$ and $g(x) = x^2$?

both are curved

right half of x^3 looks similar to right half of x^2

domains are the same

Same anchor point $(0,0)$

Same x/y intercepts

both have $(1,1)$

both increasing after $(0,0)$

e. Below are three differences between $f(x) = x^3$ and $g(x) = x^2$, explain why each is true.

The range of $f(x) = x^3$ is $(-\infty, \infty)$, but the range of $g(x) = x^2$ is $[0, \infty)$ because

both sides of x^2 go up, it has a minimum

For $x > 1$, $f(x) > g(x)$ because

x^3 gives greater values than x^2 after $x=1$

$2^2 = 4$ and $2^3 = 8$

For $0 < x < 1, g(x) > f(x)$ because

a fraction squared has a higher value than a fraction cubed

$(\frac{1}{2})^2 = \frac{1}{4}$ $(\frac{1}{2})^3 = \frac{1}{8}$