Integrated Math 3
Unit 6: Polynomials
6.7

Name: _____

Date: _____ Period: _____

Objective: to explore different changes in graphs and recognize odd and even functions.

Warm-up: Classify each polynomial by degree and by number of terms. Make sure that all polynomials are in standard form first.

a. $a^2 + a^3 - 4a^4$

$\Rightarrow -4a^4 + a^3 + a^2$

Quartic Trinomial

b. $(2a - 5)(a^2 - 1)$

$\Rightarrow 2a^3 - 5a^2 - 2a + 5$

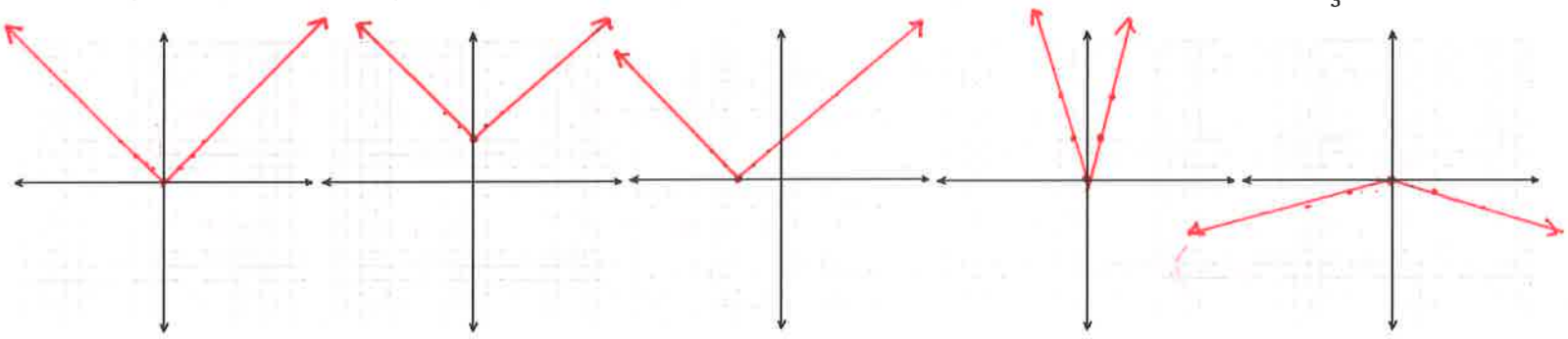
Cubic Polynomial

	a^2	-1
$2a$	$2a^3$	$-2a$
-5	$-5a^2$	5

Explore: Graph each of the following equations.

Graphing Absolute Value Functions: Using your graphing calculator, graph each of the following equations – you can get the absolute value on your calculator by pressing the MATH key, then arrow over to NUM and your first choice should be abs(then just press ENTER. **Be sure to close your parenthesis when the absolute value ends**.

1 a. $y = |x|$ b. $y = |x| + 3$ c. $y = |x + 3|$ d. $y = 3|x|$ e. $y = -\frac{1}{3}|x|$



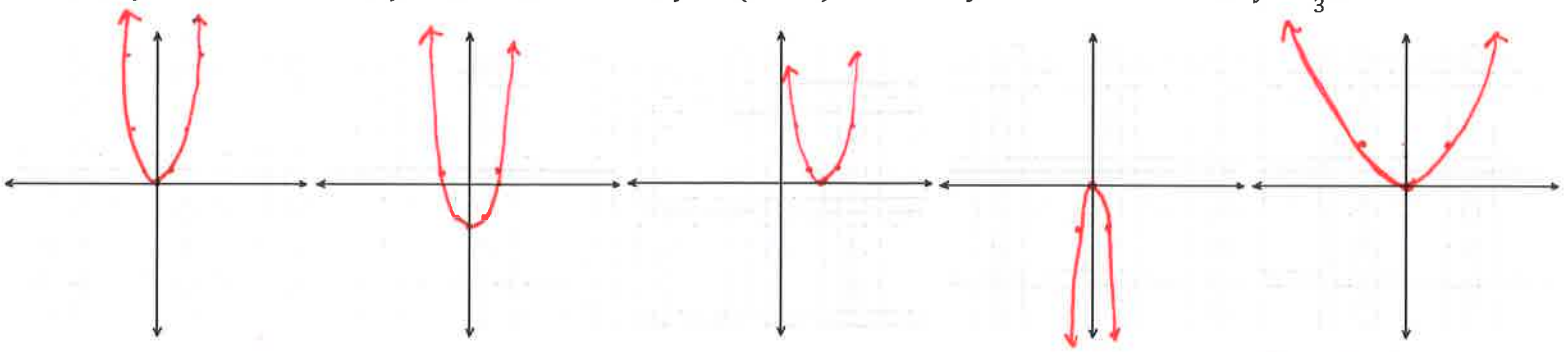
Explain what happened to the graph in part b. It moved up 3 units

Explain what happened to the graph in part c. It moved to the left 3 units

Explain what happened to the graph in part d. It stretched by a factor of 3.

Explain what happened to the graph in part e. It reflected over the x-axis and Compressed by a factor of 1/3.

2 a. $y = x^2$ b. $y = x^2 - 3$ c. $y = (x-3)^2$ d. $y = -3x^2$ e. $y = \frac{1}{3}x^2$



Explain what happened to the graph in part b. It moved down 3 units

Explain what happened to the graph in part c. It moved to the right 3 units

Explain what happened to the graph in part d. It reflected over the X-axis and stretched by a factor of 3.

Explain what happened to the graph in part e. It compressed by a factor of 1/3.

Reflect:

4. Consider the two equations: $y = x^3$ *and* $y = x^3 - 6$. How are these two graphs different?

They share the same parent function so they will look the same, except the second one will be shifted down 6 units.

5. Consider the two equations: $y = x^3$ *and* $y = (x+2)^3 - 4$. How are these two graphs different?

They are the same function, but the second one shifted left 2 units and down 4 units from the first.

6. Consider the two equations: $y = x^3$ *and* $y = 3(x+1)^3 - 5$. How are these two graphs different?

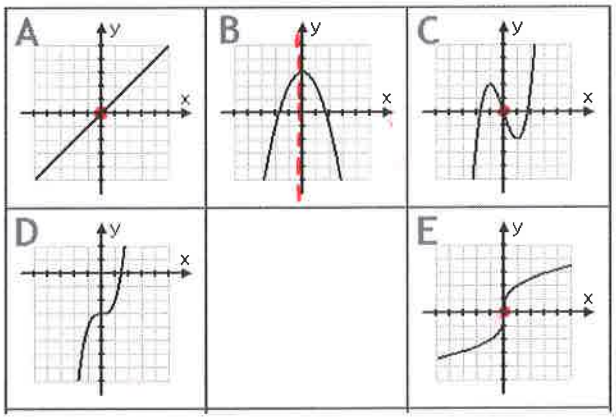
The second function will be shifted left 1 and down 5 units from the first. It will also be stretched by a factor of 3.

Odd and Even Functions:

An Even Function: The graph of an even function is symmetric about the y-axis.

An Odd Function: The graph of an odd function is symmetric about the origin.

7. Determine which graphs are odd, even, or neither.



A: Odd

B: Even

C: Odd

D: Neither

E: Odd

8. Determine whether each function is even, odd, or neither.

a. $g(x) = \frac{1}{x^3+x}$

CALC: 1/(X^3 + X)

Odd

b. $f(x) = x^4 + x^3 + x^2 + x + 1$

Neither