Exit Ticket Day 2

Math 3 Unit 2

Name: MCG Key

Date:_____ **Pd:**_____

Simplify.

1. $\sqrt{-144}$ 12i

$\sqrt{-1 \cdot 144}$

$\sqrt{-1} \cdot \sqrt{144}$

2. $\sqrt{63}$ $3\sqrt{7}$

$\sqrt{9 \cdot 7} = \sqrt{9} \cdot \sqrt{7}$

3. $3\sqrt{75}$ $15\sqrt{3}$

$3 \cdot \sqrt{25 \cdot 3}$

4. $-7i + 9i$ 2i

5. $(-7i + 3) - (5i - 9)$ $-12i + 12$

$-7i + 3 - 5i + 9$

6. $(7i)(-2i)$ 14

$-14i^2 = -14(-1)$

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Simplify.

1. $\sqrt{-144}$ _____

2. $\sqrt{63}$ _____

3. $3\sqrt{75}$ _____

4. $-7i + 9i$ _____

5. $(-7i + 3) - (5i - 9)$ _____

6. $(7i)(-2i)$ _____

Solve

$m^2 + 8 = -5m$ ← set = 0

$+5m \quad +5m$

8 / 5

$m^2 + 5m + 8 = 0$

$a = 1$
$b = 5$
$c = 8$

$$x = \frac{-5 \pm \sqrt{5^2 - 4(1)(8)}}{2(1)}$$

$$= \frac{-5 \pm \sqrt{-7}}{2} = \frac{-5 \pm i\sqrt{7}}{2}$$

$12x^2 + 11x = -3$

$12x^2 + 11x + 3 = 0$

$a = 12$
$b = 11$
$c = 3$

$$x = \frac{-11 \pm \sqrt{11^2 - 4(12)(3)}}{2(12)}$$

$$= \frac{-11 \pm \sqrt{-23}}{24} = \frac{-11 \pm i\sqrt{23}}{24}$$

P. 11|12

Math 3
Unit 2 Day 3 notesheet

Name _____

When a polynomial is in standard form, the *degree* = highest exponent

example: $y = 3x^2 - 5x^6 + 41x^3 - 17x - 2 = -5x^6 + 41x^3 + 3x^2 - 17x - 2$

degree = 6 leading coefficient = -5 sign of leading coefficient = −

When a polynomial is in factored form, the *degree* = add exponents together

example: $y = x^1(x+2)^3(2x-1)^2(x+16)^1$

1+3+2+1

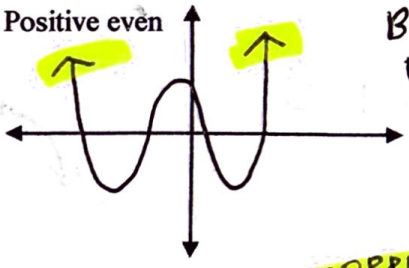
degree = 7 leading coefficient = 2^2 = 4 sign of leading coefficient = +

The *sign of the leading coefficient* = RIGHT end behavior

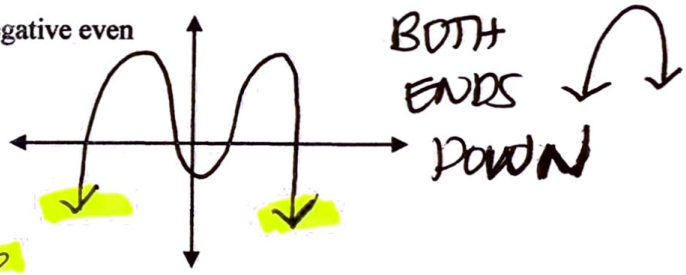
The end behavior depends on whether the degree is ***even/odd*** and the leading coefficient is ***positive/negative***.

*When the degree is EVEN, the graph looks like: = SAME END BEHAVIOR

Positive even



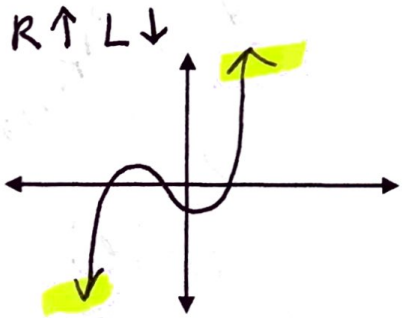
Negative even



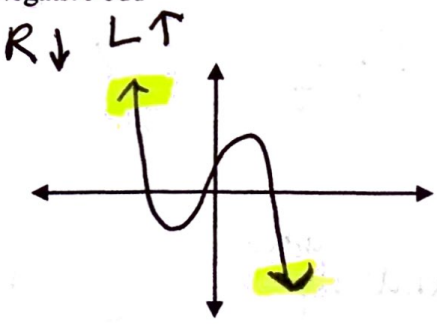
= OPPOSITE END BEHAVIOR

*When the degree is ODD, the graph look like:

Positive odd



Negative odd



RIGHT

*To determine if the polynomial is +/-, just look at the right-hand end behavior. $(x \to \infty)$

If the right-hand side is pointing up, then it is POSITIVE. + LC (leading

If the right-hand side is pointing down, then it is NEGATIVE. - LC coeff.)

DEGREE

LEFT

*The left-hand side is determined by the even/odd. $(x \to -\infty)$

If it is even, the branches go in the same direction. (both up or both down).

If it is odd, the branches go in opposite directions.(one is up and the other is down).

Degree	Leading coefficient	$(x \to -\infty)$ (left)	$(x \to \infty)$ (right)
even	positive	$y \to \infty$	$y \to \infty$
even	negative	$y \to -\infty$	$y \to -\infty$
odd	positive	$y \to -\infty$	$y \to \infty$
odd	negative	$y \to \infty$	$y \to -\infty$

Multiplicity = number of times each root / x-int. appears

Example: $y = x(x-1)^2(x+2)(x+4)^3$

$x = 0$ $\quad x-1=0 \Rightarrow x = 1, 1$ $\quad x+2=0 \Rightarrow x=-2$ $\quad x+4=0 \Rightarrow x=-4,-4,-4$

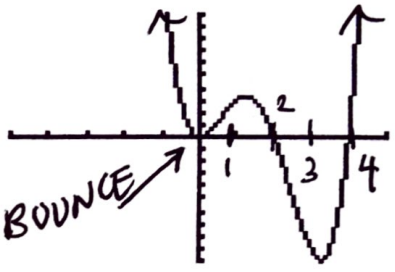
If the multiplicity = 1, then the graph will CROSS

If the multiplicity = 2 (or any even value), then the graph will BOUNCE

If the multiplicity = 3 (or any odd greater than 3), then the graph will WIGGLE

Decide whether the graphs are even/odd; positive/negative; what the roots are; and the multiplicity of each root.

A.



DEGREE

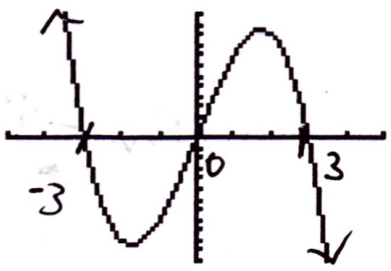
even/odd both ends same

LC positive/negative RIGHT UP

roots 0, 0, 2, 4

$y = x^2(x-2)(x-4)$

B.



even/odd opposite ends

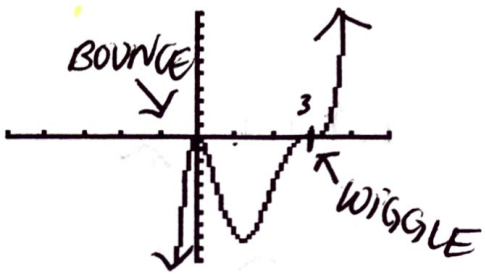
positive/negative RIGHT ↓

roots -3, 0, 3

$y = -(x+3)(x)(x-3)$

$-3x = 0$

C.



even/odd opposite!

positive/negative R ↑

roots 0, 0, 3, 3, 3

$y = x^2(x-3)^3$