Honors Algebra/Trig
Graphing Polynomials

10/5/17

Warm Up: Given $f(x) = x^3 - 6x^2 + 8x$

- factor completely
- use the factors to identify the x-intercepts

$f(x) = x(x^2 - 6x + 8)$ (0,0)

$f(x) = x(x-4)(x-2)$ (4,0)

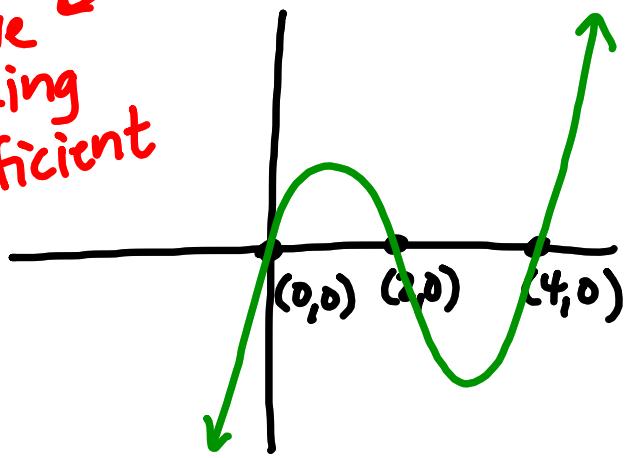
$0 = x(x-4)(x-2)$ (2,0)

This will NOT be a parabola! (Why not?)

What will it look like? (NC)

Ex#1: Graph (NC) $f(x) = x^3 - 6x^2 + 8x$

positive leading coefficient



x-int:
(0,0)
(2,0)
(4,0)

- Shape
- Smooth and Continuous
- Leading Coefficient
- End Behavior
- Multiplicity

Ex#2: Graph (NC) $f(x) = 1x^3 - 12x^2 + 36x$

leading coeff is positive

$f(x) = x(x^2 - 12x + 36)$

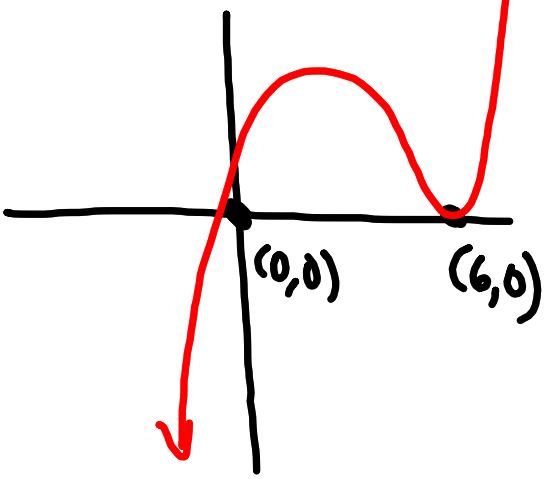
$f(x) = x(x-6)(x-6)$

$f(x) = x(x-6)^2$

(0,0)

(6,0)

multiplicity of 2



- Shape
- Smooth and Continuous
- Leading Coefficient
- End Behavior
- Multiplicity

Ex#3: Graph (NC) $f(x) = 6x^4 - 33x^3 - 18x^2$

$f(x) = 3x^2(2x^2 - 11x - 6)$

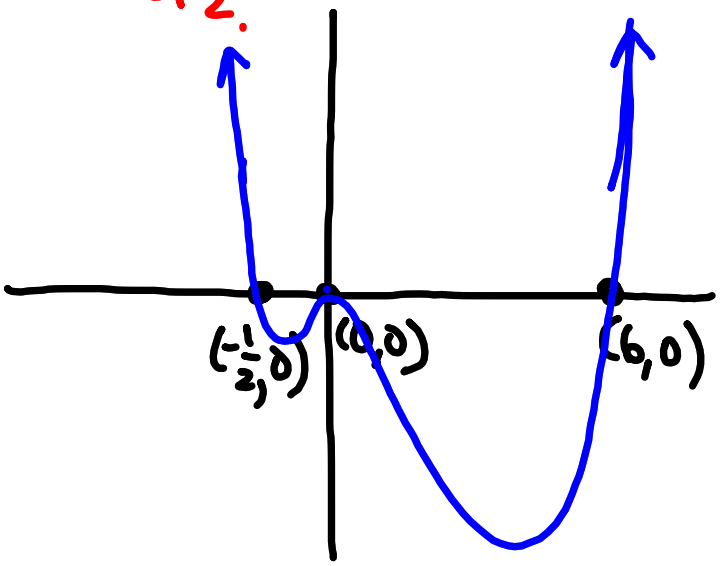
$f(x) = 3x^2(2x+1)(x-6)$

$0 = 3x^{\textcircled{2}}(2x+1)(x-6)$

$x = 0 \quad x = -\frac{1}{2} \quad x = 6$

mult. of 2.

- Shape
- Smooth and Continuous
- Leading Coefficient
- End Behavior
- Multiplicity



Ex#4: Sketch the graph of a 4th degree polynomial with x-intercepts at (-3, 0) m2 (2, 0) m1, and (5, 0) m1 and y-intercept (0, 6). Find the equation of this curve.

$y = a(x+3)^2(x-2)^1(x-5)^1$

$6 = a(0+3)^2(0-2)(0-5)$

$\frac{6}{90} = \frac{90a}{90}$

$\frac{1}{15} = a$

$y = \frac{1}{15}(x+3)^2(x-2)(x-5)$

- Shape
- Smooth and Continuous
- Leading Coefficient
- End Behavior
- Multiplicity

Extra Problems for Board

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

$y = x^2(x-5)^2$

$y = -x(x-5)^2(x-4)(x+2)$

$$y = -\frac{1}{3}x^3 - \frac{5}{3}x^2 + \frac{8}{3}x + 4$$

October 5, 2017

Assignment: Worksheet

HAT

More Graphing Polynomials

10/10/16

Warm Up: Find the QUOTIENT and REMAINDER when $x^3 + 9x^2 + 11x - 21$ is divided by $x + 3$ (NC)

Ex#1: Given $f(x) = x^3 + 9x^2 + 11x - 21$ (NC)

- factor completely
- graph

- Shape
- Smooth and Continuous
- Leading Coefficient
- End Behavior
- Multiplicity

Ex#2: For the polynomial $f(x) = 2x^3 + 3x^2 - 8x + 3$ (NC)

- make a list of all possible rational zeros
- given **factor** $(2x - 1)$, factor completely
- graph

- Shape
- Smooth and Continuous
- Leading Coefficient
- End Behavior
- Multiplicity

Ex#3: For the polynomial $g(x) = 2x^4 + 7x^3 - 4x^2 - 27x - 18$

- make a list of all possible rational zeros
- given **x-intercept** $\left(-\frac{3}{2},\ 0\right)$, factor completely
- graph

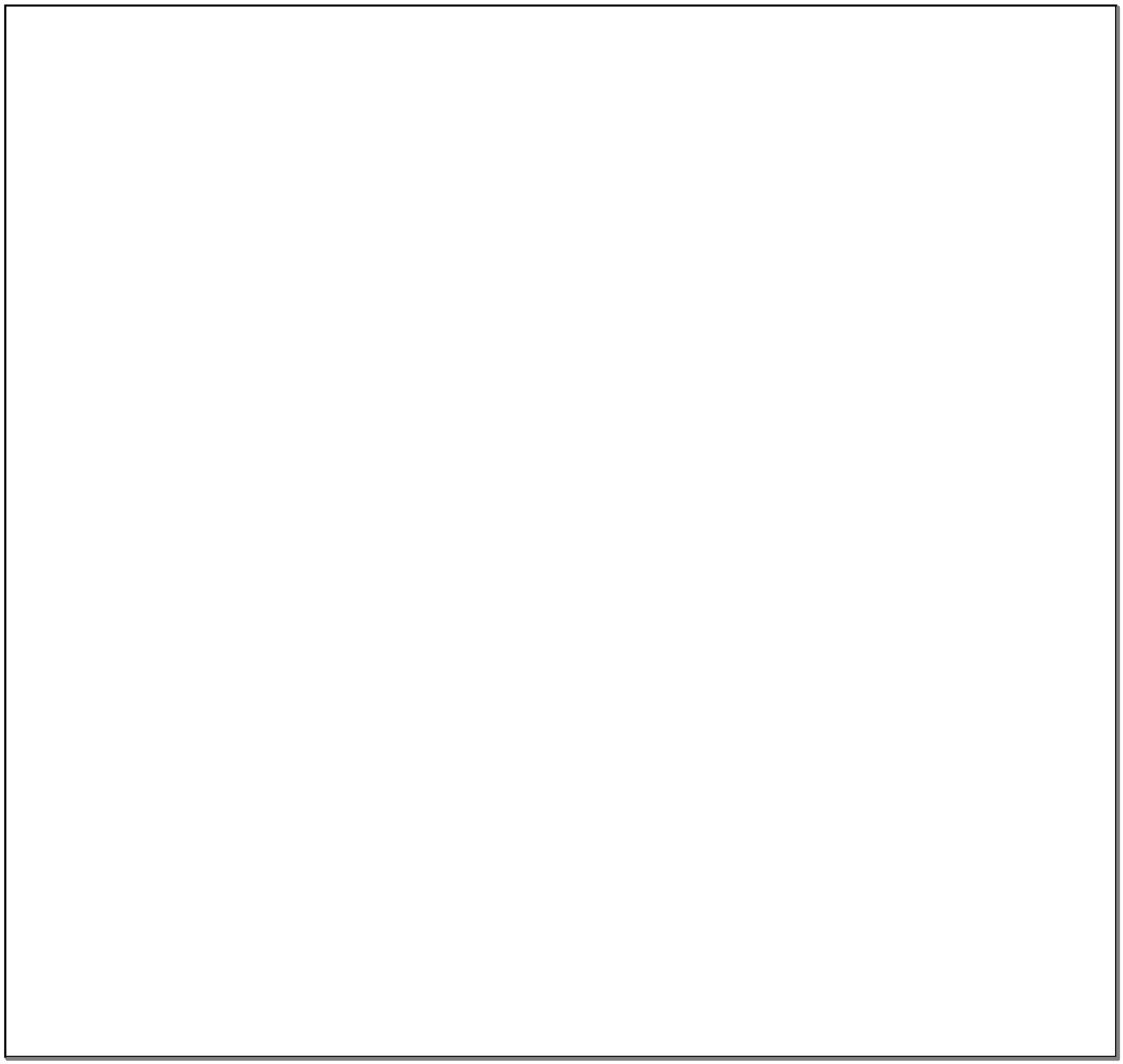
- Shape
- Smooth and Continuous
- Leading Coefficient
- End Behavior
- Multiplicity

Ex#4: Graph $f(x) = x^4 + 2x^3 - 13x^2 - 14x + 24$ (NC)

- Shape
- Smooth and Continuous
- Leading Coefficient
- End Behavior
- Multiplicity

Assignment: page 371 #27, 32, 34

For each problem:

- Make a list of the possible rational zeros
- Factor completely
- List the x- and y-intercepts
- State the end behavior (use appropriate notation)
- Graph

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