Daily Agenda

Learning Target:

I can use Factor Theorem, Multiplicity of Zeros, and End Behavior to sketch the graph of a polynomial.

Homework
4.4 Worksheet

Assessments
4.1 to 4.4 Quiz 11/4
Unit 4 Test 11/14

Life is either a daring adventure or nothing.
-Helen Keller

Nov 15-8:24 PM

① x^3+3x^2-4

Poss. Zeros: $\pm 1, 2, 4$

$1 \mid 1 \quad 3 \quad 0 \quad -4$
$\quad\quad \downarrow \quad 1 \quad 4 \quad 4$
$\quad\quad 1 \quad 4 \quad 4 \quad 0$

$(x-1)(x^2+4x+4)$
$(x-1)(x+2)(x+2)$ or $(x-1)(x+2)^2$

Nov 2-11:02 AM

② $x^4+2x^3-17x^2-18x+72$

Poss. Zeros: $\pm 1, 2, 3, 4, 8, 9, 18, 24, 36, 72, 6, 12$

$3 \mid 1 \quad 2 \quad -17 \quad -18 \quad 72$
$\quad\quad \downarrow \quad 3 \quad 15 \quad -6 \quad -72$
$2 \mid 1 \quad 5 \quad -2 \quad -24 \quad 0$
$\quad\quad \downarrow \quad 2 \quad 14 \quad 24$
$\quad\quad 1 \quad 7 \quad 12 \quad 0$

$(x-3)(x-2)(x^2+7x+12)$
$(x-3)(x-2)(x+4)(x+3)$

Nov 2-11:08 AM

$f(x)=x^3+x^2-8x-12$

Poss. zeros: $\pm 1, 2, 3, 4, 6, 12$

$3 \mid 1 \quad 1 \quad -8 \quad -12$
$\quad\quad \downarrow \quad 3 \quad 12 \quad 12$
$\quad\quad 1 \quad 4 \quad 4 \quad 0$

Zeros: $3, -2$

$(x-3)(x^2+4x+4) \Rightarrow (x-3)(x+2)(x+2)$

Nov 2-11:10 AM

4.4 Graphing Polynomials in Standard Form

Zeros of a Function

- a value of x, real or complex, that makes P(x)=0
- if P(c)=0, then (x-c) is a factor of P(x)
- if P(x) has degree "n", then P(x) has "n" zeros

Factors

- if P(x) has degree "n", then P(x) has "n" linear factors

Nov 15-8:30 PM

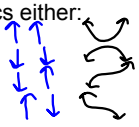
How do we graph this without a calculator?

$$f(x)=-x^3+2x^2+5x-6$$

End Behavior

look at degree and LC mimics either:

x^2 $-x^2$ x^3 $-x^3$



x^2

as $x \to -\infty$, $f(x) \to \infty$
as $x \to \infty$, $f(x) \to \infty$

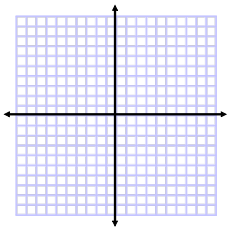
Multiplicity of Zeros

even - bounces
odd - crosses

Jan 17-7:39 AM

Sketch the graph of the given function. Include the y-intercept, x-intercept(s), end behavior and multiplicity.

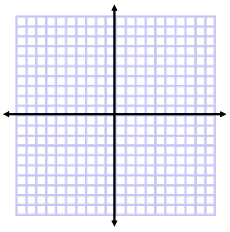
$f(x) = -x^3 + 2x^2 + 5x - 6$



Jan 6-8:24 AM

Sketch the graph of the given function. Include the y-intercept, x-intercept(s), end behavior and multiplicity.

$f(x) = x^4 + 4x^3 - 3x^2 - 14x - 8$



Jan 9-9:21 AM