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M	T	W	T	F
QUIZ Turning Points	Graphing Polynomials Day 1	Graphing Polynomials Day 2	Test Review	Unit 4 Test

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## Warm-Up

Find all Zeros

$$f(x) = 2x^3 + x^2 - 50x - 25$$

$$f(x) = \overbrace{x^3 + 2x^2 - 12x - 9}$$

$$f(x) = x^4 + x^3 + x^2 - 9x - 10$$

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## Objective

Today we will...

- Graph Polynomial Functions (Day 1)

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## Resetting the Calculator

#7

#1

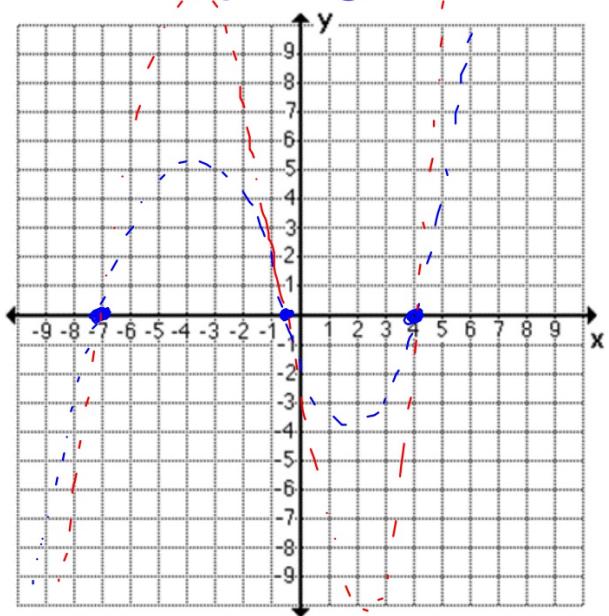
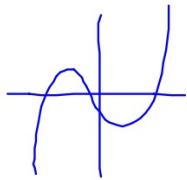
#2

## Setting the Stage for Graphing

$$f(x) = 2x^3 + 7x^2 - 53x - 28$$

$$f(x) = (x + 7)(2x+1)(x - 4)$$

$$x = -7, -\frac{1}{2}, 4$$



## Turning Points

- Point where the graph changes direction
- Also called Relative Maxima/Minima

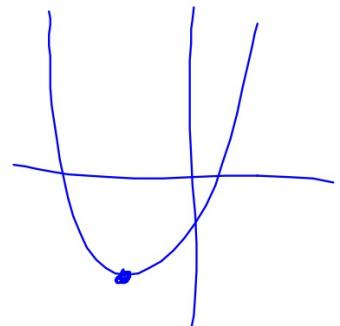
Relative Minimum- lowest "local" point

Relative Maximum- highest "local" point



## Calculator Steps

- 1) Plug Function into  $y =$
- 2)  $2nd$   $\boxed{\text{Trace}}$  ( $\text{Calc}$ )
- 3) Min or Max
- 4) Mark Left bound and Right Bound
- 5) Hit  $\boxed{\text{Enter}}$  for "Guess"



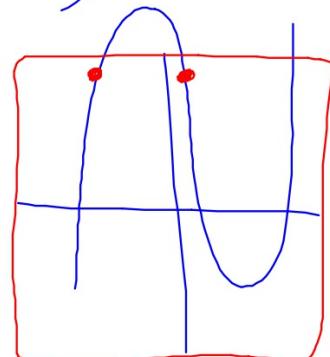
Ex. 1)  $f(x) = -3x^3 + 20x^2 - 36x + 16$   
Relative Min:  $(2.25, -3.61)$

Relative Max:  $(3.19, 7.3)$

Ex. 2)  $f(x) = 4x^3 - 12x^2 - x + 15$

Relative Min:  $(2.04, -3.02)$

Max:  $(-0.04, 15.02)$



Ex. 3)  $f(x) = 5x^4 - 3x^2 + 2x + 1$

Relative Min:  $(-0.67, -0.68)$

Max: None



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## Parts we need to graph Polynomials

1. End Behavior
2. X-Intercepts (Zeros)
3. Y-Intercept
4. Relative Min/Max

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$$\text{Ex. 1 } f(x) = 2x^3 + 3x^2 - 8x + 3$$

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End Behavior:

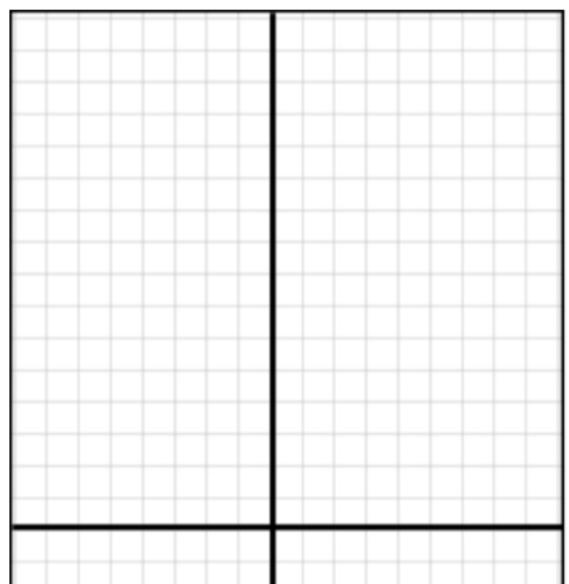
Factors:

Zeros:

Y- Intercept:

Relative Min:

Relative Max:



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$$\text{Ex. 2 } f(x) = x^4 + x^3 - 11x^2 - 9x + 18$$

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End Behavior:

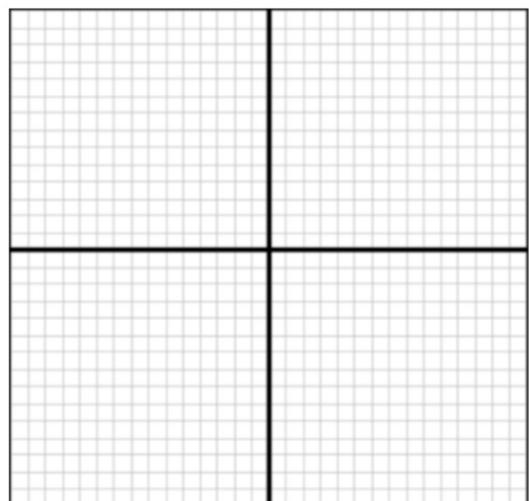
Factors:

Zeros:

Y- Intercept:

Relative Min:

Relative Max:



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$$\text{Ex. 3} \quad f(x) = x^3 - 7x - 6$$

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End Behavior:

Factors:

Zeros:

Y- Intercept:

Relative Min:

Relative Max:

