

## Polynomial Functions and Graphing Technology: TI-83 or TI-84

### **To Graph a Function:**

[Y=] enter equation, using [X, T,  $\theta$ , n] for the variable "x"

### **To View Graph:**

[GRAPH]

[ZOOM] 6: Standard to set a standard viewing window with domain  $-10 \leq x \leq 10$  and range  $-10 \leq y \leq 10$

[WINDOW] to set a different window to see all zeros and turning points

### **To Get Real Zeros/x-Intercepts:**

(You must do this one at a time for each real zero!)

[2<sup>nd</sup>] [CALC] 2: zero ... LeftBound? arrow to an x-value to the left of a zero [ENTER]

RightBound? arrow to an x-value to the right of the same zero [ENTER]

Guess? [ENTER] ... the zero is at the bottom of the screen

### **To Get a Local Maximum:**

(You must do this one at a time for each maximum turning point!)

[2<sup>nd</sup>] [CALC] 4: Maximum ... LeftBound? arrow to an x-value to the left of a maximum [ENTER]

RightBound? arrow to an x-value to the right of the same maximum [ENTER]

Guess? [ENTER] ... the maximum is at the bottom of the screen

### **To Get a Local Minimum:**

(You must do this one at a time for each minimum turning point!)

[2<sup>nd</sup>] [CALC] 3: Minimum ... LeftBound? arrow to an x-value to the left of a minimum [ENTER]

RightBound? arrow to an x-value to the right of the same minimum [ENTER]

Guess? [ENTER] ... the minimum is at the bottom of the screen

Example:  $y = x^3 + 2x^2 - 5x + 1$

Example:      Xmin=-5      Ymin=-5  
                  Xmax=5      Ymax=15  
                  Xscl=1      Yscl=1

Zeros:  $x \approx -3.51, 0.22, 1.29$

Local Maximum: (-2.12, 11.06)

Local Minimum: (0.79, -1.21)

Try another example:

$$y = 2x^4 - 5x^3 + 4x + 3$$

Zeros:  $x = -1.16, 3.21$  (and two complex zeros)

Local Max: (0, -6)

Local Min: (2.31, -32.03) and (-0.43, -6.27)

# Polynomial Functions and Graphing Technology: TI-Nspire

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## **To Graph a Function:**

open a new document and select 2: Add Graph

f1(x)= enter equation

## **To View Graph:**

[ENTER] graph magically appears ☺

[MENU] 4: Window/Zoom ... 5: Standard to set a standard viewing window

[MENU] 4: Window/Zoom ... 1: Window Settings to set a different window to see all zeros and turning points

## **To Get Real Zeros/x-Intercepts:**

(You must do this one at a time for each real zero!)

[MENU] 6: Analyze Graph ... 1: zero      Lower Bound? click on an x-value to the left of a zero

Upper Bound? click on an x-value to the right of the same zero

the zero appears

## **To Get a Local Maximum:**

(You must do this one at a time for each maximum turning point!)

[MENU] 6: Analyze Graph ... 3: Maximum ... Lower Bound? click on an x-value to the left of a maximum

Upper Bound? click on an x-value to the right of the same maximum

the maximum appears

## **To Get a Local Minimum:**

(You must do this one at a time for each minimum turning point!)

[MENU] 6: Analyze Graph ... 2: Minimum ... Lower Bound? click on an x-value to the left of a minimum

Upper Bound? click on an x-value to the right of the same minimum

the minimum appears

Example:  $f_1(x) = x^3 + 2x^2 - 5x + 1$

Example:      Xmin=-5      Ymin=-5

Xmax=5      Ymax=15

Xscl=1      Yscl=1

Zeros:  $x \approx -3.51, 0.22, 1.29$

Local Maximum: (-2.12, 11.06)

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Try another example:

$$y = 2x^4 - 5x^3 + 4x + 3$$

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