

## **Finding Local Maxima and Minima on TI-85**

### **Example:**

Graph the function  $f(x) = x^3 - 3x^2 + 5$  over the interval  $(-1, 3)$  and find the local maxima and local minima.

Clear previously saved functions in the Y= window.

### **Enter equation for Y1**

$$y1 = x^3 - 3x^2 + 5$$

Set the viewing window for the specified interval  $(-1, 3)$

**Graph**  
**F2:Range**  
**xmin = -1**  
**xmax = 3**  
**xscl = 1**

To let the calculator determine the best ymin and ymax for the x values you have chosen

**F3: Zoom**  
**More**  
**F1: ZFit**

The Fmax and Fmin commands are affected by the tolerance setting. To set the tolerance level:

**2<sup>nd</sup> Toler**  
If tol=1E-5 press **exit**.  
If not enter **.00001**

### **To find the local maximum**

**Graph**  
**More**  
**F1: Math**  
**More**  
**F2: FMax**  
**Enter**

The cursor moves to the highest point and the coordinates are listed at the bottom of the screen.

The maximum value of 5 occurs when  $x = 0$ . (You may get a very small number which rounds to 0 such as  $-5.374905 \text{ E-}7$ )

**Repeat the process to find the local minimum**

**Graph**  
**More**  
**F1: Math**  
**More**  
**F1: FMin**  
**Enter**

The cursor moves to the lowest point and the coordinates are listed at the bottom of the screen.

The minimum value is 1 when  $x = 2$ .