

Finding Local Maxima and Minima on TI-86

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 and plots 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:Wind
xmin = -1
xmax = 3
xsc1 = 1

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

F3: Zoom
More
F1: ZFit

To find the local maximum

Graph
More

F1: Math
F5: FMax

Left Bound?: Use left and right arrows to **move cursor** to the left of the high point of the graph.

Enter

Right Bound?: Use right arrow to **move cursor** to the right of the high point of the graph.

Enter

Guess? Move cursor to the vicinity of the maximum point

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 5.6256957 E-7)

Repeat the process to find the local minimum

Graph

More

F1: Math

F4: FMin

Left Bound?: Use left and right arrows to **move cursor** to the left of the high point of the graph.

Enter

Right Bound?: Use right arrow to **move cursor** to the right of the high point of the graph.

Enter

Guess? Move cursor to the vicinity of the minimum point

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

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