Together, Maximums and Minimums are called EXTREMA

Find the coordinates of all Absolute and Relative Extrema for the function below. Round to the nearest hundredth.

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

Absolute Max:

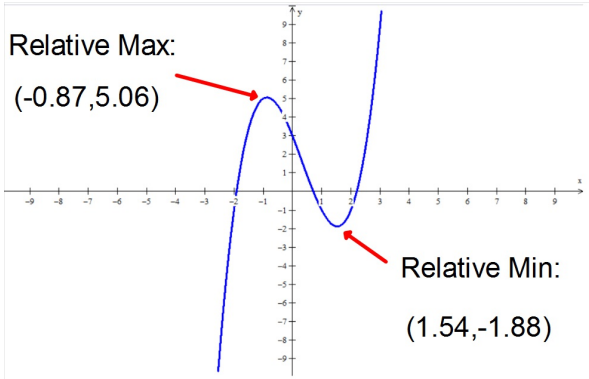
None

Absolute Min:

None

Relative Max:

Relative Min:



Absolute Max: None

Absolute Min: None

How do you find the Extrema without a Graphing Calculator?

Check my blog!

OR Learn Calculus

Winplot: this is a good one because you can download it to your computer and then use it offline.

Finding zeros of a function:

Zeros of a function are x-intecepts of the graph.

One way to find zeros of a function is to
FACTOR the function then find the zeros of each factor.

Find ALL the zeros of each function.

1. $y = 3x^5 + 6x^3 - 72x$

2. $f(x) = 2x^5 - 162x$

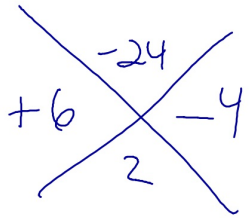
1. $y = 3x^5 + 6x^3 - 72x$

$= 3x(x^4 + 2x^2 - 24)$

$= 3x(x^2 + 6)(x^2 - 4)$

$= 3x(x^2 + 6)(x \pm 2)$

$x = 0, \pm 2, \pm i\sqrt{6}$



2. $f(x) = 2x^5 - 162x$

$= 2x(x^4 - 81)$

$= 2x(x^2 + 9)(x^2 - 9)$

$= 2x(x^2 + 9)(x \pm 3)$

$x = 0, \pm 3i, \pm 3$

How do you find the zeros of a function if you can't factor it?

By graphing

Finding zeros of a function with the graphing calculator:

Method 1: Finding ZEROS

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

Use the option on the graphing calculator to find zeros:
2ND TRACE
2: ZEROS

zeros are: -2.81 , -1

Zeros of a function are the values of x when y = 0.

Method 2: Finding Intersections

$$0 = x^4 + 2x^3 - 3x^2 - x + 3$$

Graph $Y_1 = x^4 + 2x^3 - 3x^2 - x + 3$
and $Y_2 = 0$

use the option on the graphing calculator to find points of intersection.
2ND TRACE
5: intersect

zeros are: -2.81 , -1

When finding zeros by graphing you are only able to find the REAL zeros!

Find ALL real zeros of this function: $y = x^3 - x^2 - 5x + 3$