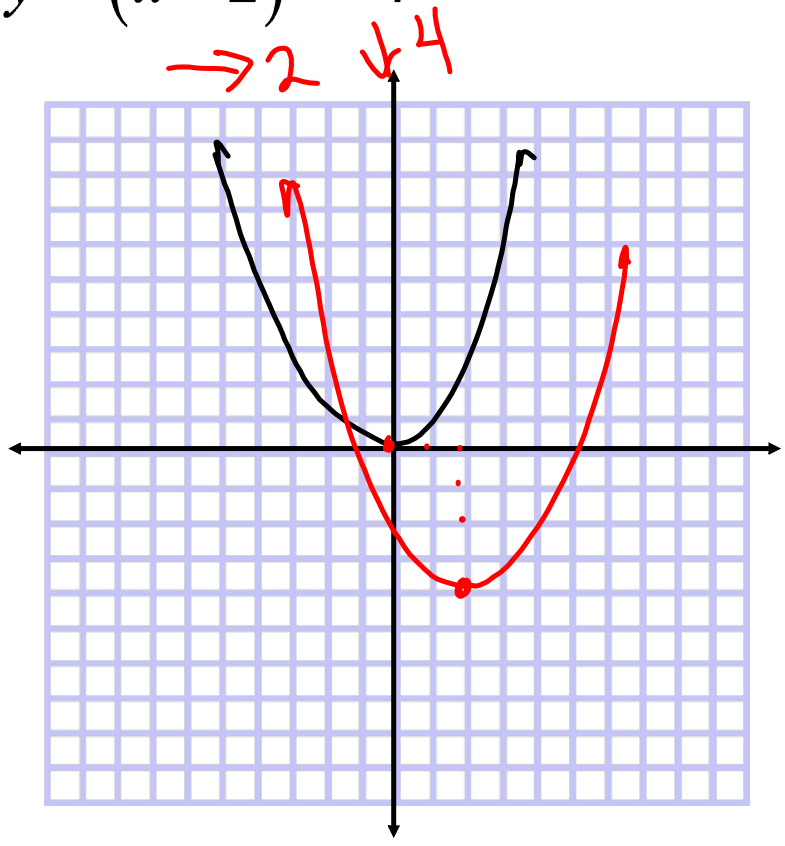
Algebra 2

Unit 3.6 Minimums and Maximums

Warmup: Graph the following function and identify the highest and lowest point on the graph.

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



Lowest:

(2, -4)

Highest:

None

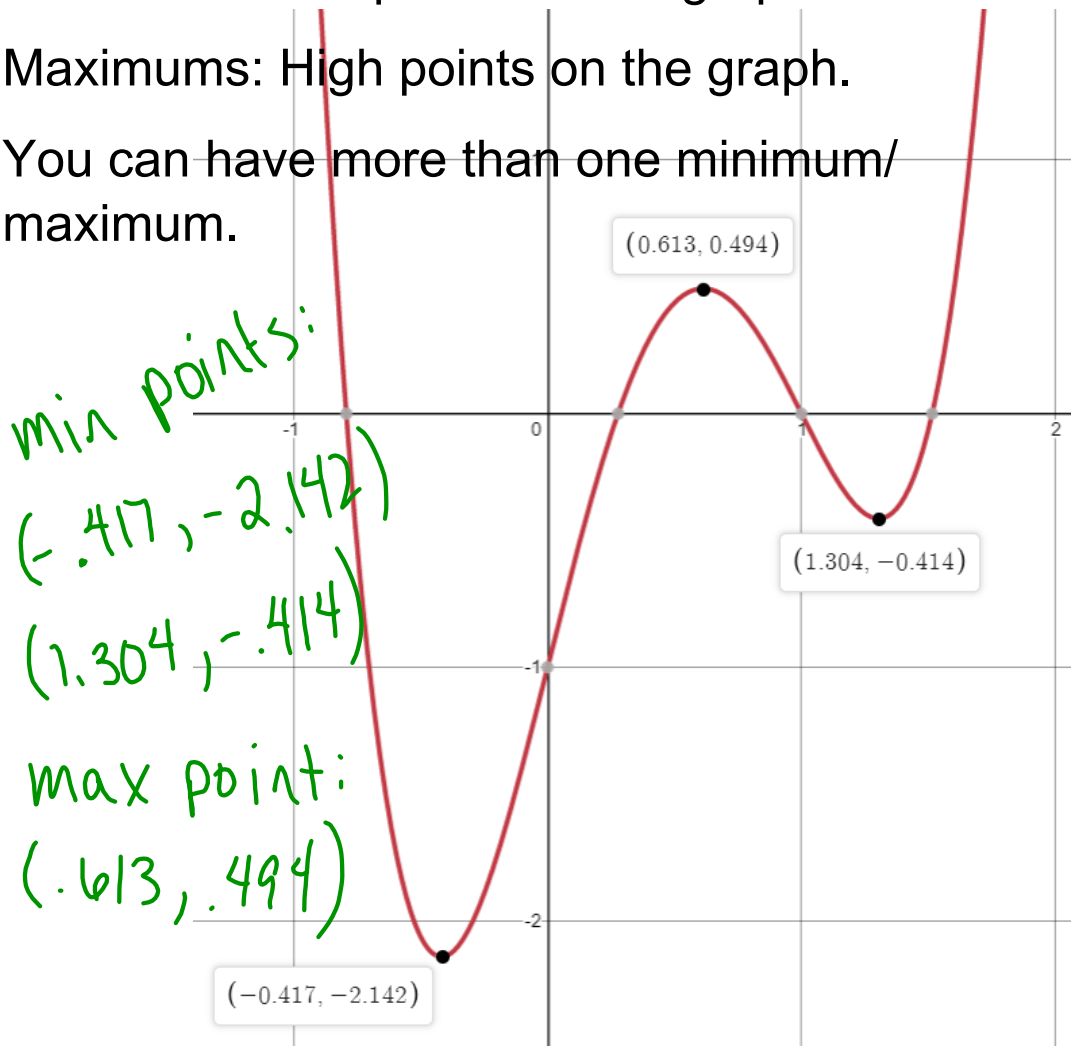
Throughout this lesson we will get more and more specific definitions for minimums and maximums. Let's start out with a general idea and narrow in from there.

Loose Definitions:

Minimums: Low points on the graph.

Maximums: High points on the graph.

You can have more than one minimum/ maximum.



This graph has two minimums and one maximum.

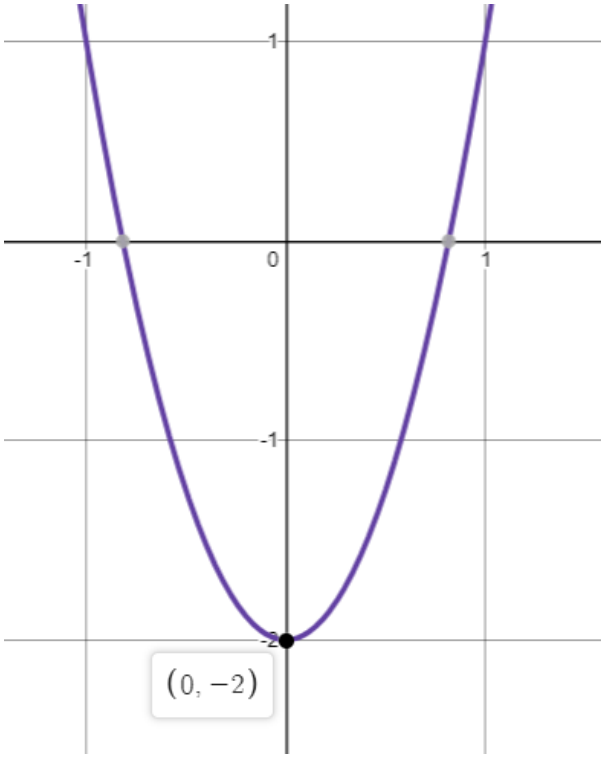
The points for the minimums are:

The points for the maximums are:

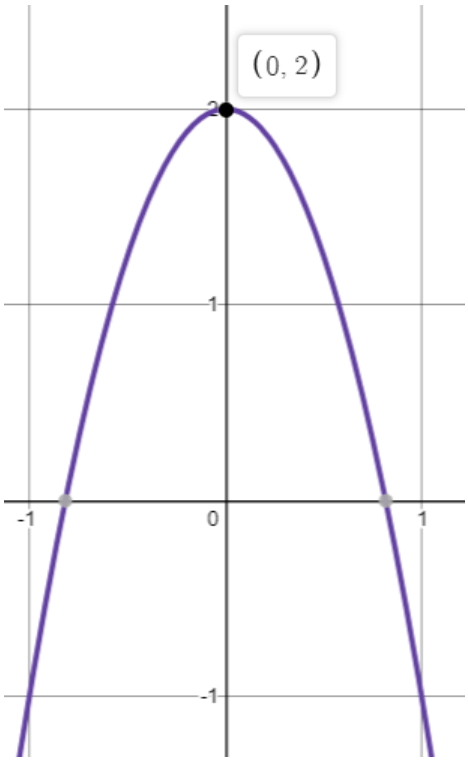
Graphs that don't have a Min or Max:

Graph A has no Maximum because there is no "Peak" on the graph. It just continues to go up with no sign of stopping. The reverse is true of Graph B. It has no Minimum because there is no "Valley" on the graph.

Graph A



Graph B



Max/Min vs Max/Min Value:

Minimums and maximums should always be given as x-values.

Min/Max Values should always be given as y-values.

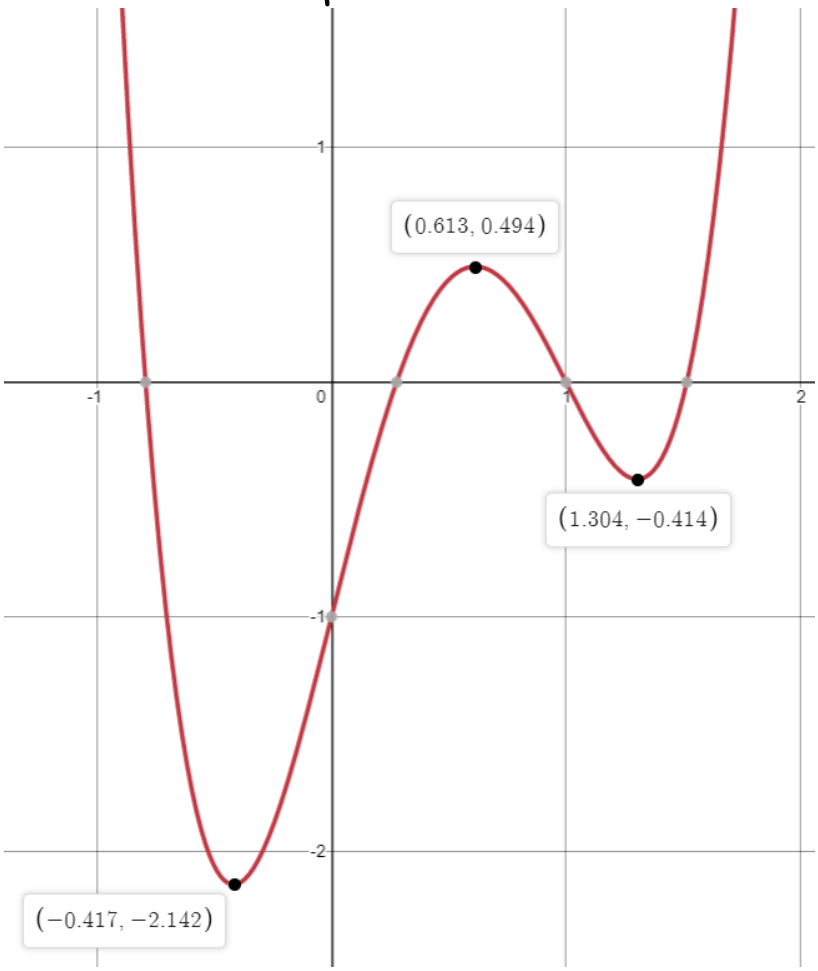
Using the previous example, state the following:

Min(s): $-.417$ & 1.304

Max(s): $.613$

Min Value(s): -2.412 & $-.414$

Max Value(s): $.494$



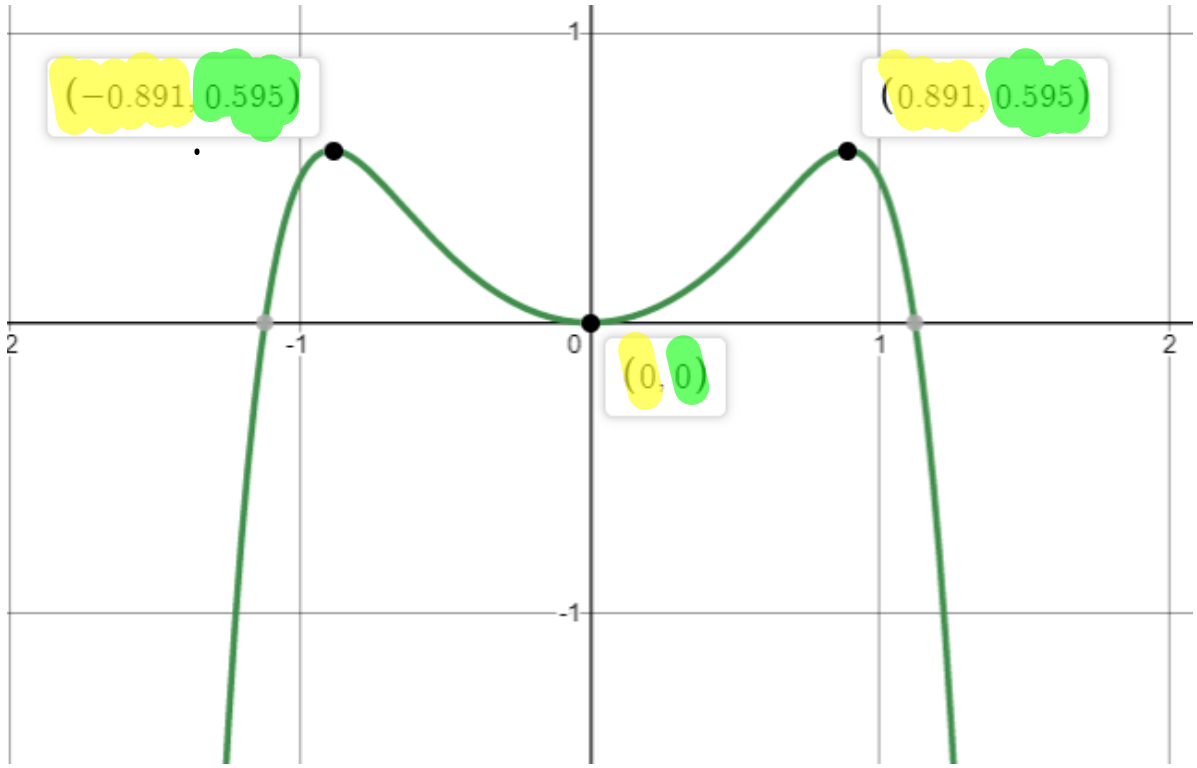
Ex: Using the graph shown, state the following

Min(s): 0

Max(s): -.891 & .891

Min Value(s): 0

Max Value(s): .595



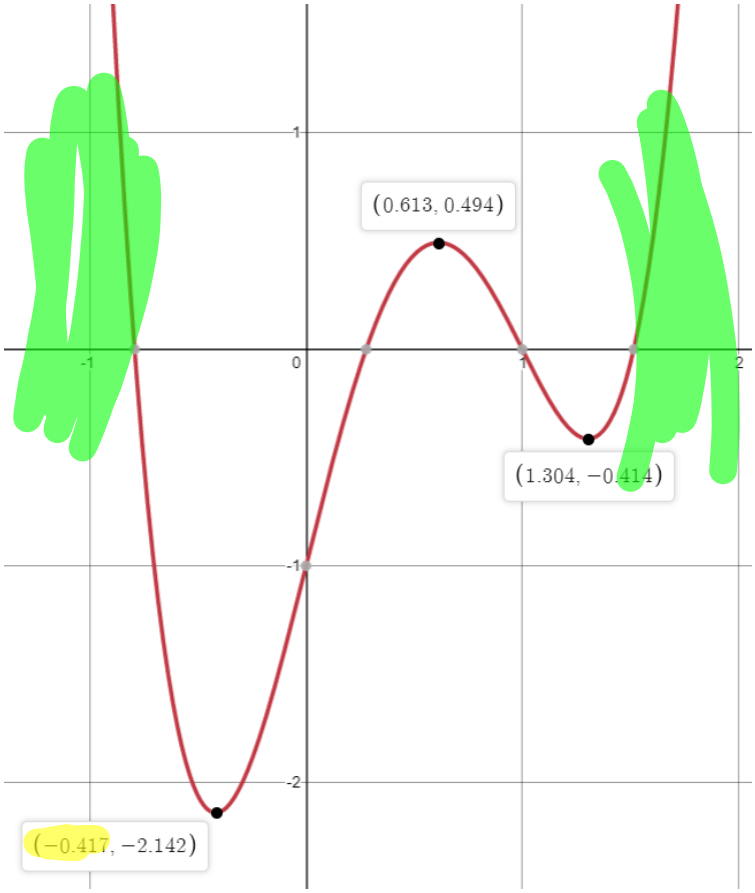
Local vs Absolute:

The minimums and maximums we have been finding so far have been "Local" Mins/Maxs.

The "Absolute Maximum" is the maximum that has the largest value.

The "Absolute Minimum" is the minimum that has the smallest value.

You can only have one Absolute Max and one Absolute Min



Abs. Max:

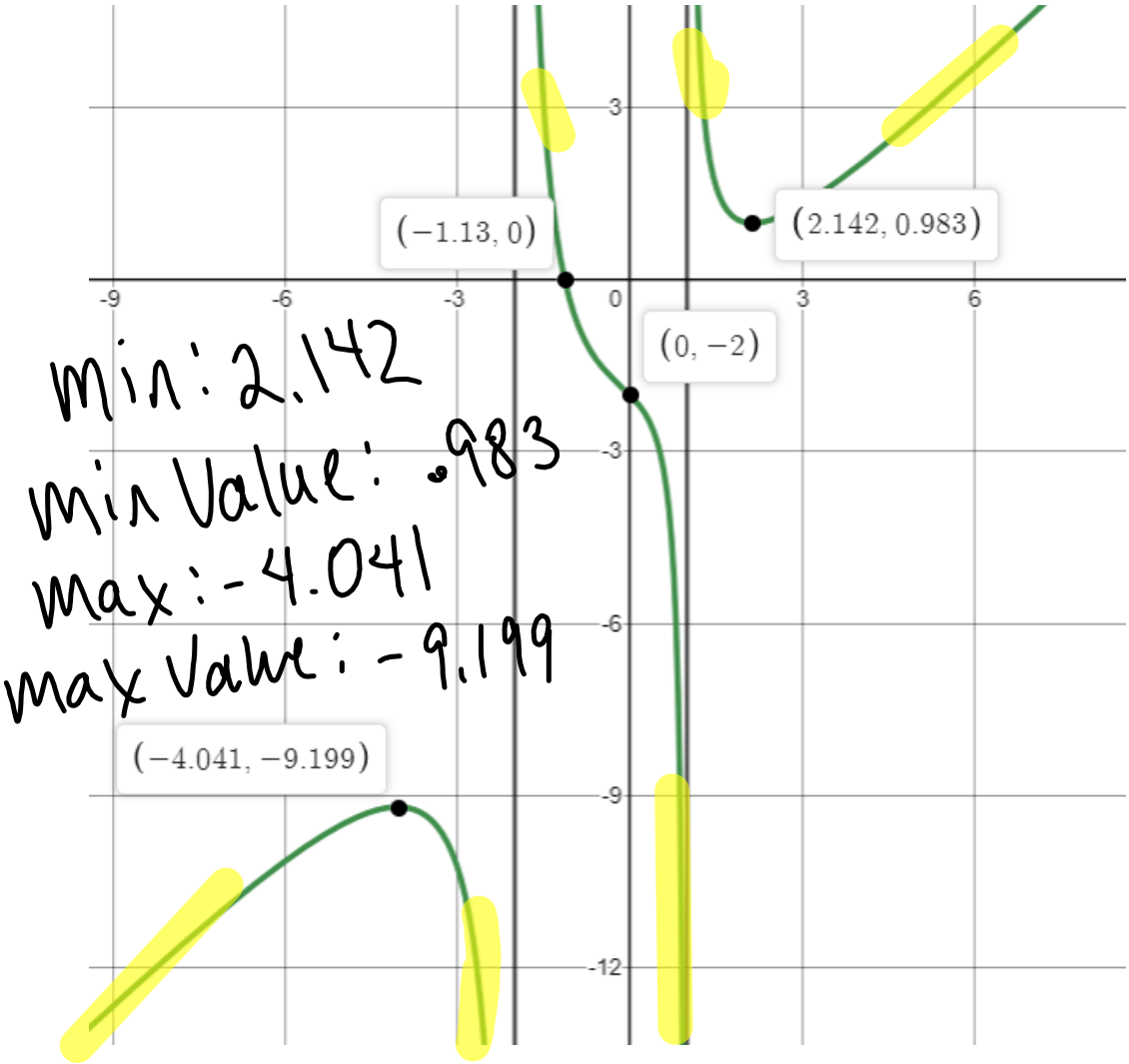
Abs. Max Value:

Abs. Min:

Abs. Min Value:

State the Local and Absolute "Extrema" of the following graph:

(Extrema is just a word for Min & Max)



Min: 2.142
Min Value: .983
Max: -4.041
Max Value: -9.199

Homework: U3.6 Worksheet

Problem 1 (going over in class)

min: 1

min Value: -4

max: -3

max Value: -1