

## Writing Assignment 5

Due Monday, September 28, 11:59 PM

Prompt: What is an example of a real-world situation where you might want to be able to find local extrema of a function (whether you are finding a local minima, maxima, or both)? Think of, or find, at least three distinct examples of real-world situations in which finding the local extrema of a function could be, or is, useful. Then, tell me about each of them.

**Warning.** One answer that I will not accept is an answer about stock markets. Let me tell you why: It is incredibly difficult to model the future behavior of stocks. So yes, if we had some beautiful function that could predict how stocks would behave in the future, finding local maxima and minima could be worth a lot. But we can't do that.

The real meat of this writing assignment is for you to find examples of useful functions in the real world! Remember, functions can represent all kinds of things. The trajectory of a baseball (as a function of time), the pressure underwater (as a function of depth below the surface), concentration of oxygen in the air (as a function of height about sea level), the efficiency of a solar panel (as a function of the angle at which it's tilted), the concentration of algae in a bay (as a function of concentration of nitrogen at the surface of the bay), et cetera. And it will be important to pay attention to what the *input* and *outputs* of the function you're studying are.