CALCULUS I

A guide on handling word problems.

When should you take a derivative?

Any time you are asked to find the slope, a tangent line, a minimum, a maximum, a rate of change, a growth rate, a decay rate, and, of course, $f'(x), y', \dfrac{dy}{dx}$ etc.

When should you find a second derivative?

Any time you are asked to find an inflection point, a change in growth rate, a change in decay rate, and, of course, $f''(x), y'', \dfrac{d^2 y}{dx^2}$ etc.

When should you let the first derivative equal to zero?

Any time you want to locate a local minimum or a local maximum. The x-values you find are plugged into your original function to find corresponding y-values.

When should you let the second derivative equal to zero?

Any time you want to locate a point of inflection. The x-values you find are plugged into your original function to find corresponding values.

When should you evaluate a first derivative?

Any time you are asked for information that involves the slope at a point, such as, an equation for a tangent line at a certain point, the value of a growth rate or decay rate.

When should you evaluate a second derivative?

Any time you are interested in the concavity at a certain point.