### Chapter 1

* A rate of change is a measure of how an independent variable is changing as the dependent variable
* Average rate of change (AROC)

* A positive average rate of change indicates that the change in y-value is increasing on the specific interval. It is also indicates by a secant line that has a positive slope.
* A negative average rate of change indicates that the change in y-value is decreasing on the specific interval. It is also indicates by a secant line that has a negative slope.
* A zero average rate of change indicates that there is no change in y-values on the specific interval

### Chapter 2

* A instantaneous rate is how a function is changing at a specific value of the independent variable
* We find the slope of one point by finding the instantaneous rate of change (IROC)
* Ex: find the IROC at given
  + There are three methods for finding the IROC
    - Method 1: preceding / following interval
      * Ex: find the IROC at given
      * Preceding: . AROC= -2
      * Following: AROC= 8
      * IROC=
    - Method 2: centered interval
      * IROC=
    - Method 3: difference quotient
      * IROC
      * is a very small value. Ex: 0.001. The smaller the value is, the more accurate the estimation will be
      * IROC
  + Method 3 creates the most accurate solution out of the 3 methods

### Chapter 3

* The slope of a secant line is equivalent to the average rate of change over the interval defined by the x-coordinates of two points
* The slope of the tangent at one point is the instantaneous rate of change at this point

### Chapter 4&5

* The instantaneous rate of change at minimum or maximum point is zero. As a result, the tangent lines drawn at these points will be horizontal lines
* If the instantaneous rate of change is negative before the value where the rate of change is zero and positive after its value, then a minimum occurs; If the instantaneous rate of change is positive before the value where the rate of change is zero and negative after its value, then a maximum occurs.