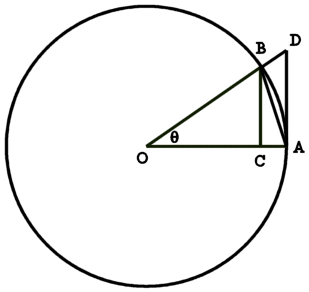
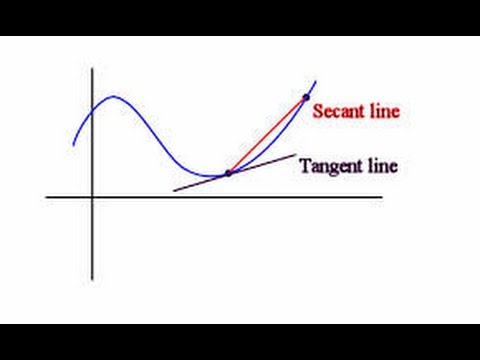
Epsilon-Delta Notation: A notation for limits where one specifies for the x-range of the limit (notated by δ), that the y-values will be within a range (notated by ε).

Squeeze Theorem: Given an inequality x ≥ y ≥ z, if x = z, then y = x = z.

Proof of :

Given the diagram shown to the right, we can determine that the triangle ABO has an area of (its height is sin(x)), we can also determine the Sector AB has an area of () and the triangle ADO has an area of (its height is tan(x)). After finding the areas of these triangles we can order then in an inequality, || < | | < ||. We can simplify this inequality by multiplying it by || to get 1 < < . We can then invert the inequality and get 1 > > cos(x), since cos(x) moves towards 1 the closer x is to 0 we can then use the squeeze theorem to say that the .

Derivative: The instantaneous slope (or rate of change) of a function.

Equation of a Derivative: Given an equation f(x) the equation of the tangent line can be found by using the generalized form of the limit of the slope of the secant line as delta(X) approaches 0. If we denote delta(X) as h we find the slope of any secant line of a function will be which can be simplified to which once we take the limit of this equals the equation which is the definition of a derivative.

Example of Taking a Derivative Using the Equation of a Derivative: Let us take the derivative of the equation x2. If we use the points (x,f(x)) and (x+h,f(x+h)) in our example then our slope will be we can then simplify this to this then may be simplified to which may be simplified to 2x as we are looking for the limit of the slope as h approaches 0 which means the derivative of x2 is 2x.

Power Rule of Derivatives: Given an expression of the form of axb we find that the derivative of the expression is equal to abxb-1.

Notations of Derivatives: There are several ways to express a derivative, commonly used is or both of which denote the derivative of a function.

Distribution of a Derivative: Given an expression we find that it is equivalent to . In addition, given the expression we find it equivalent to .

Derivative of a Polynomial: When taking the derivative of a polynomial you distribute the derivative to each of the polynomial’s individual terms. Ex: x2 + x + 1, after taking its derivative we find it to be which equals 2x+1.