**Differential Calculus Formulas**

How do we study differential calculus? The differentiation is defined as the rate of change of quantities. Therefore, calculus formulas could be derived based on this fact. Here we have provided a detailed explanation of differential calculus which helps users to understand better.

Suppose we have a function f(x), the rate of change of a function with respect to x at a certain point ‘o’ lying in its domain can be written as;

df(x)/dx at point o

Or df/dx at o

So, if y = f(x) is a quantity, then the rate of change of y with respect to x is such that, f'(x) is the derivative of the function f(x). Also, if x and y varies with respect to variable t, then by the [chain rule formula](https://byjus.com/chain-rule-formula/), we can write the derivative in the form of differential equations formula as;

**Applications**

In mathematics, differential calculus is used,

* To find the rate of change of a quantity with respect to other
* In case of finding a function is increasing or decreasing functions in a graph
* To find the maximum and minimum value of a curve
* To find the approximate value of small change in a quantity

**Real-life applications of differential calculus are:**

* Calculation of profit and loss with respect to business using graphs
* Calculation of the rate of change of the temperature
* Calculation of speed or distance covered such as miles per hour, kilometres per hour, etc.,
* To derive many Physics equations

**Problems and Solutions**

Go through the given differential calculus examples below:

**Example 1:** f(x) = 3x2-2x+1

**Solution:** Given, f(x) = 3x2-2x+1

Differentiating both sides, we get,

f’(x) = 6x – 2, where f’(x) is the derivative of f(x).