Constant average rate of change	Constant average rate of change

The function graph is a line	Monotony of functions

$x \in Dom(f)\colon f'(x) = 0$	$\frac{\Delta y}{\Delta x} = c$ where c is a constant

The change of the dependent variable is a multiple of the change of the independent variable	Point on the graph where the function goes from decreasing to increasing or vice versa

They are critical point for the f'' graphic	The change in the dependent variable and the change in the independent variable are directly proportional

The instantaneous rate of change approaches a constant	$f''(x) > 0 \ \ or$ $f''(x) < 0, \forall x \in I$

Product Rule

$(fg)'(x) = f'(x)g(x) + f(x)g'(x)$

The relationship between the independent variable and the dependent variable is linear

The graph of the function is increasing or decreasing on an interval I

The graph of the function is increasing or decreasing on an interval I

Points where the instantaneous rate of change of a function is zero

If $x_1 < x_2$ then $f(x_1) < f(x_2)$

or $f(x_1) > f(x_2), \forall x_1, x_2 \in I$

$f'(x) > 0 \ \ or$ $f'(x) < 0, \forall x \in I$	They are critical points where exist a sign change of the first derivative

Points where exist a change in the concavity of the graph of the function	The instantaneous rate of change is always positive or always negative on an interval I

The tangent line to the graph of the function is increasing or decreasing	The concavity changes at an inflection point

Critical points	Critical Points

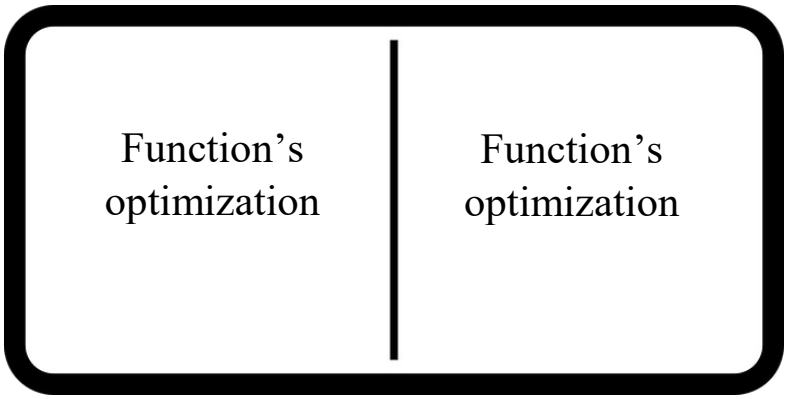
Chain Rule $(f \circ g)'(x) = f'(g(x))g'(x)$	Study of the sign of the first derivative of a function

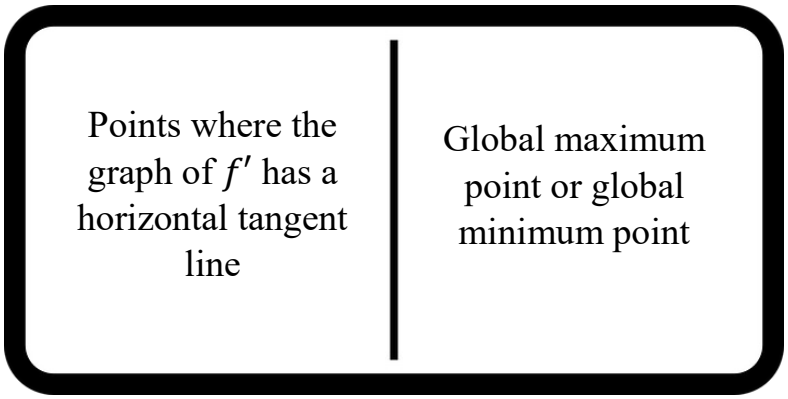
Local maximum point or local minimum point	Point on the graph of a function where an extreme value is reached

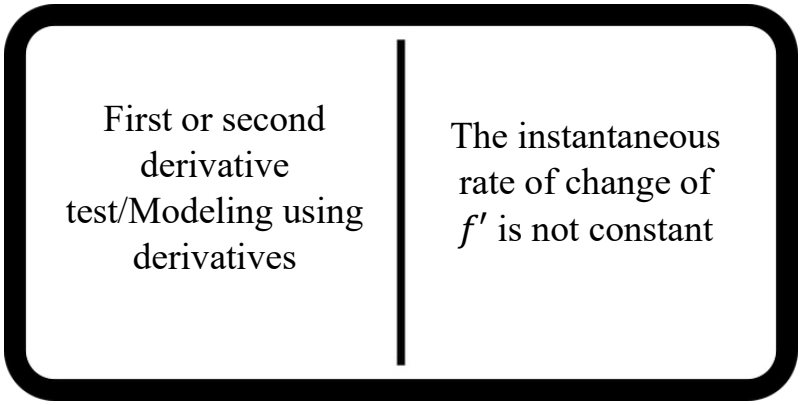
Value of the domain where the tangent line to the graph of the function is horizontal	Inflection points

The graph of the function is concave up or concave down	Point of the domain where the slope of the line is zero

Points where the function does not present changes	Power rule $(x^n)' = nx^{n-1}$


Function's optimization
Function's optimization


Points where the graph of f' has a horizontal tangent line
Global maximum point or global minimum point


First or second derivative test/Modeling using derivatives
The instantaneous rate of change of f' is not constant

Quotient rule

$$\left(\frac{f}{g}\right)'(x) = \frac{f'(x)g(x) - f(x)g'(x)}{g^2(x)}$$

Extreme points of the graph of a function

Points in the domain of f where exist a sign change of f''

Points in the domain of f where exist a sign change of f''

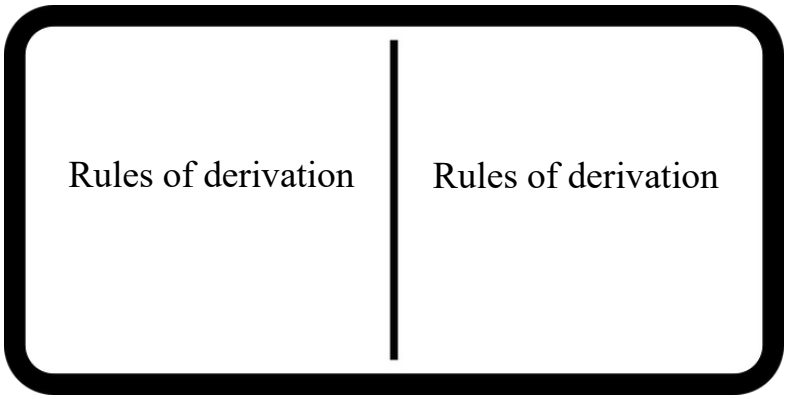
It is related to the change of f'

The graph of the function goes from increasing faster (or decreasing faster) to increasing slower (or decreasing slower)

Possible extreme points of the graph of f'	Addition and subtraction rule $(f \pm g)'(x) = f'(x) \pm g'(x)$

Concavities of the graph of a function	Concavities of the graph of a function

Study of the sign of the second derivative of a function	Implicit derivation rule


Rules of derivation
Rules of derivation