Derivada y Razón de Cambio.

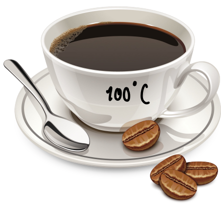
- la m de la tan.
- Razón de Cambio: como varía una V. R. otra.

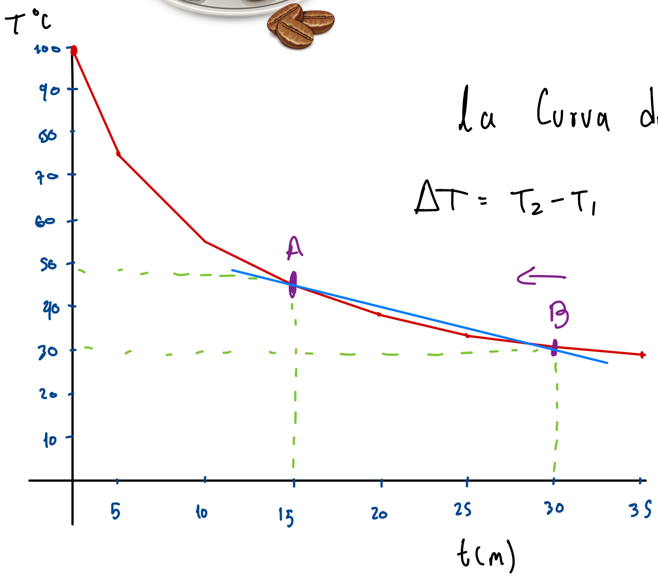
↳ Concepto:

Graficamente.

$$T(t) = 24 + 76e^{-0.08t}$$

t	T
0	100°C
5	75°C
10	58°C
15	47°C
20	39°C
25	34°C
30	31°C
35	29°C





La Curva de enfriamiento.

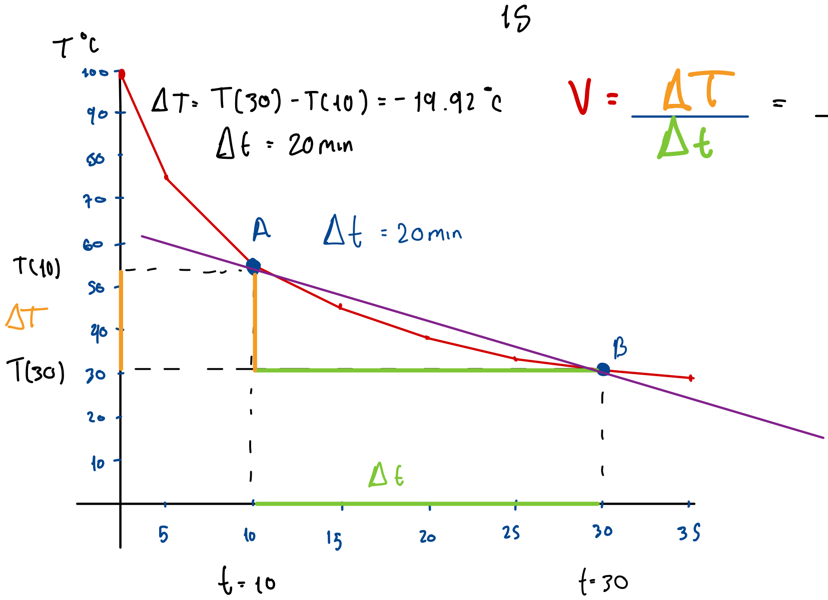
$\Delta T = T_2 - T_1$

$V = \dfrac{\Delta T}{\Delta t}$ Ej: $V = \dfrac{30\ Km}{h}$

$$V = \frac{T(30) - T(15)}{30 - 15}$$

$$V = \frac{30° - 45°}{15}$$

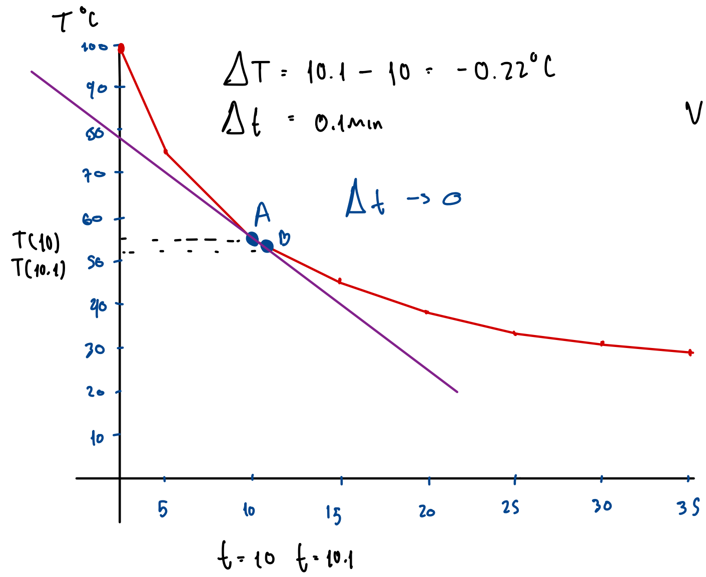
$$V = \frac{-5°}{15} = -0.3\ °C$$



$\Delta T = T(30) - T(10) = -19.92\ °C$

$\Delta t = 20\ min$

$$V = \frac{\Delta T}{\Delta t} = \frac{-19.92\ °C}{20\ min} = -1\ \frac{°C}{min}$$



$\Delta T = 10.1 - 10 = -0.22\ °C$

$\Delta t = 0.1\ min$

$\Delta t \to 0$

$$V = \frac{\Delta T}{\Delta t} = \frac{-0.22\ °C}{0.1\ min} = -2.19\ \frac{°C}{min}$$

$\frac{\Delta T}{\Delta t}$ = Velocidad promedio = Pendiente recta Secante.

$\frac{dT}{dt}$ = Velocidad instantanea = Pendiente recta tangente.

$$\frac{\Delta t}{\Delta t} = \frac{T(t+\Delta t) - T(t)}{\Delta t}$$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$\frac{dT}{dt} = \frac{T(t + dt) - T(t)}{dt}$$

$$\lim_{h \to 0} \frac{f(x+h) - f(x)}{h}$$

$$f(x) = \operatorname{Sen} x^2$$

$$f'(x) = 2x \operatorname{Cos} x^2$$

Geometricamente

Estudiar

- $m = 0$ → la tan es horizontal.
- $m > 0$ → Creciente
- $m < 0$ → Decreciente
- $m = \nexists$ → No. se puede Calc.

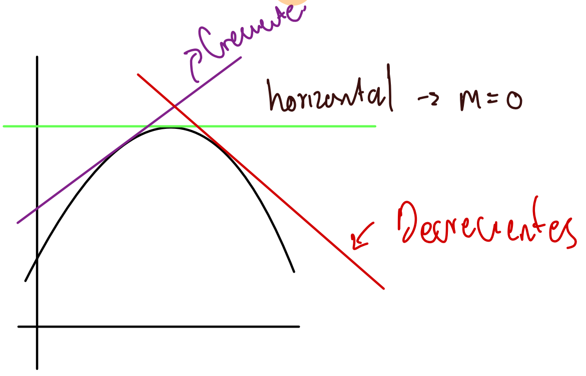
Analitica:

$y' = 0$

$y' > 0$

$y' < 0$

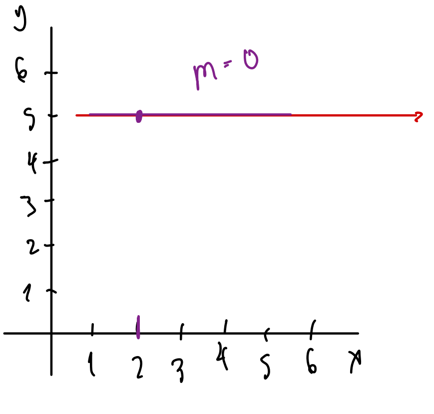
$y' < \nexists$



$f(2) = (2) + 2(2) = 6$

$f(2) =$

$f(x) = 5$



$f(x) = 5$

$f(1) = 5$

$f(6) = 5$