CIAG 2020 - DIAS DO CURSO DE CÁLCULO

DERIVADA

CIAG 2020 - DIAS DO CURSO DE CÁLCULO

DERIVADA - Taxa de variação de $f(x)$

Seg 1 M teoria

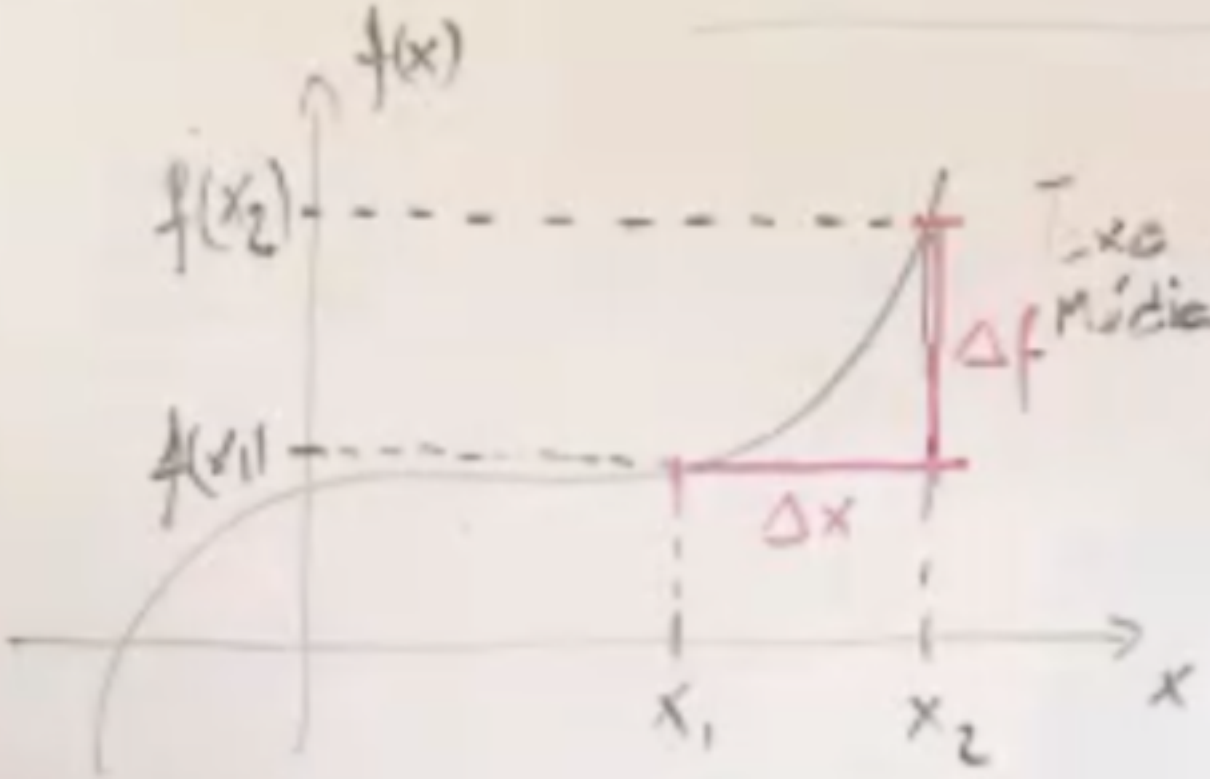
Seg 2 M teoria

Seg 3 T 15h Exercícios em Grupo

~~Seg 4 T~~

CIAG 2020 - DIAS DO CURSO DE CÁLCULO

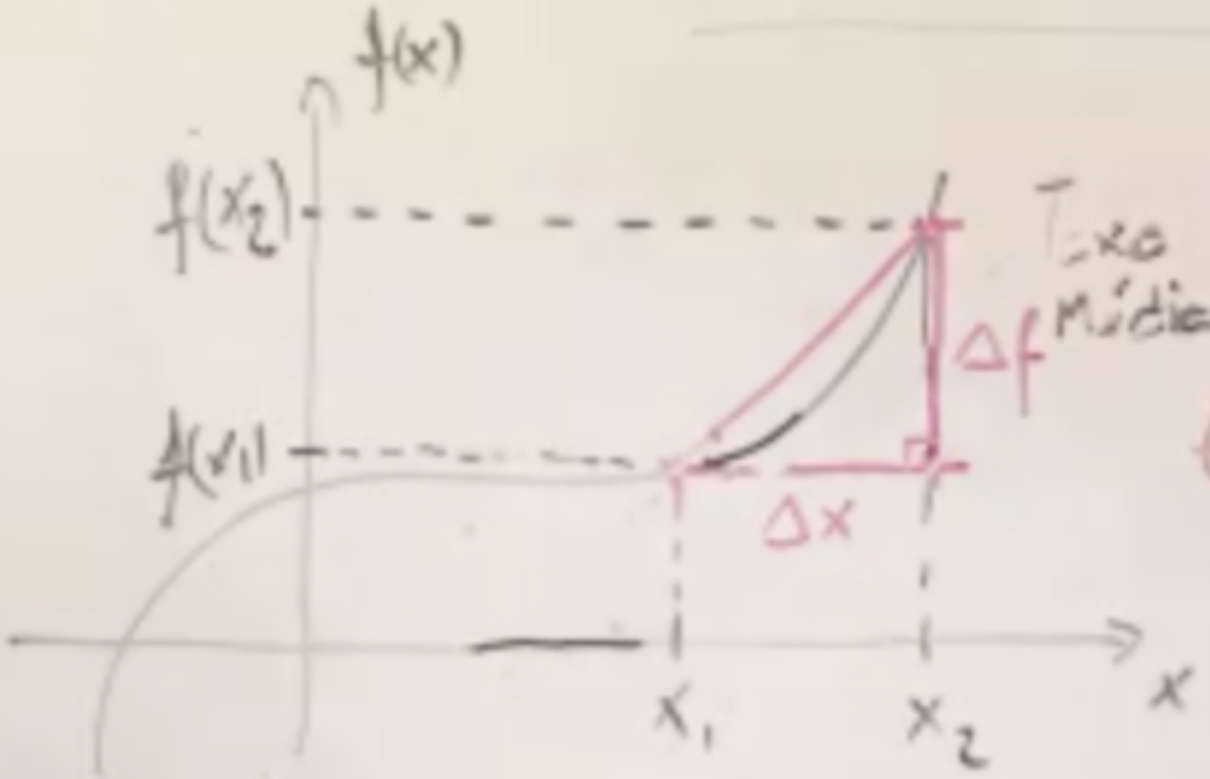
DERIVADA - Taxa de variação de $f(x)$



$$\text{Taxa média} = \frac{\Delta f}{\Delta x} = \frac{f(x_2) - f(x_1)}{x_2 - x_1}$$

CIAG 2020 - DIA OS DO CURSO DE CÁLCULO

DERIVADA - Taxa de variação de $f(x)$



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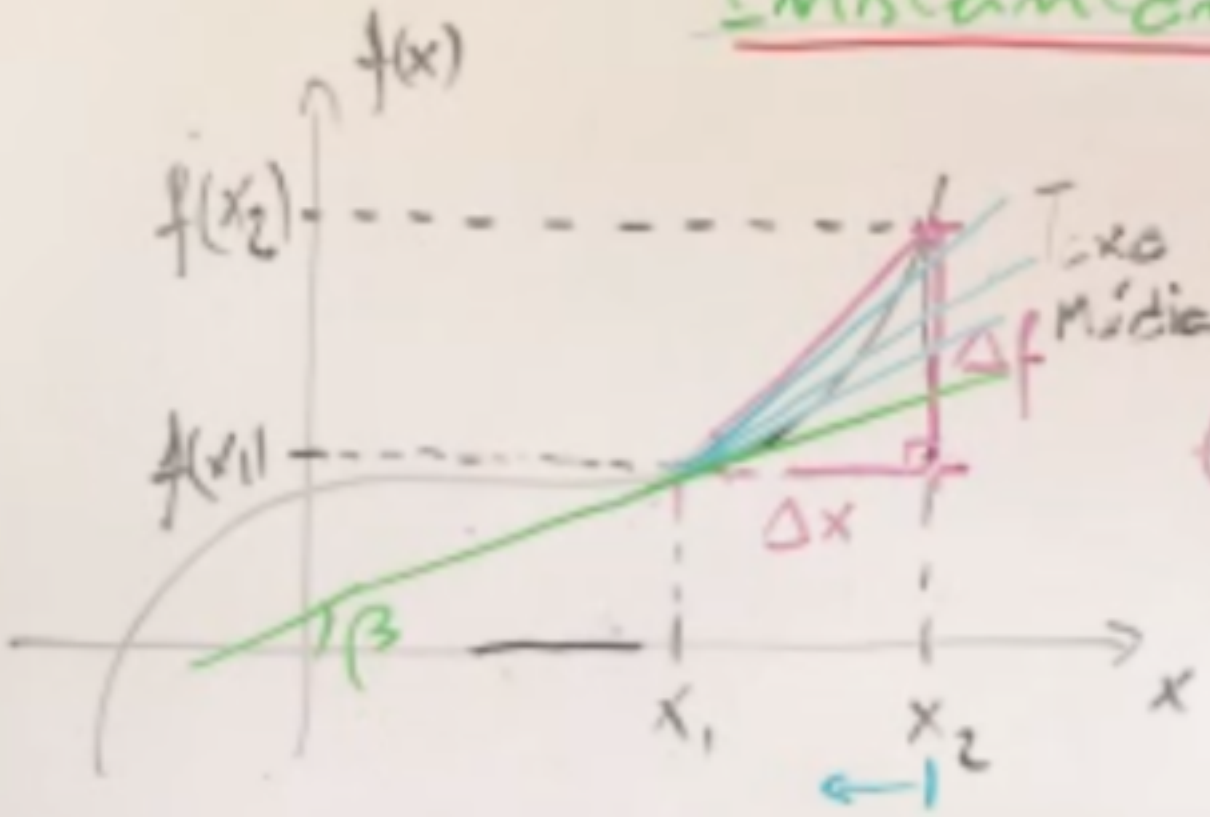
$$tg\,\alpha = \frac{\Delta f}{\Delta x}$$

CIAG 2020 - DIA OS DO CURSO DE CÁLCULO

DERIVADA - Taxa de variação Instantânea de $f(x)$



$$\text{Taxa média} = \frac{\Delta f}{\Delta x} = \frac{f(x_2)-f(x_1)}{x_2-x_1}$$

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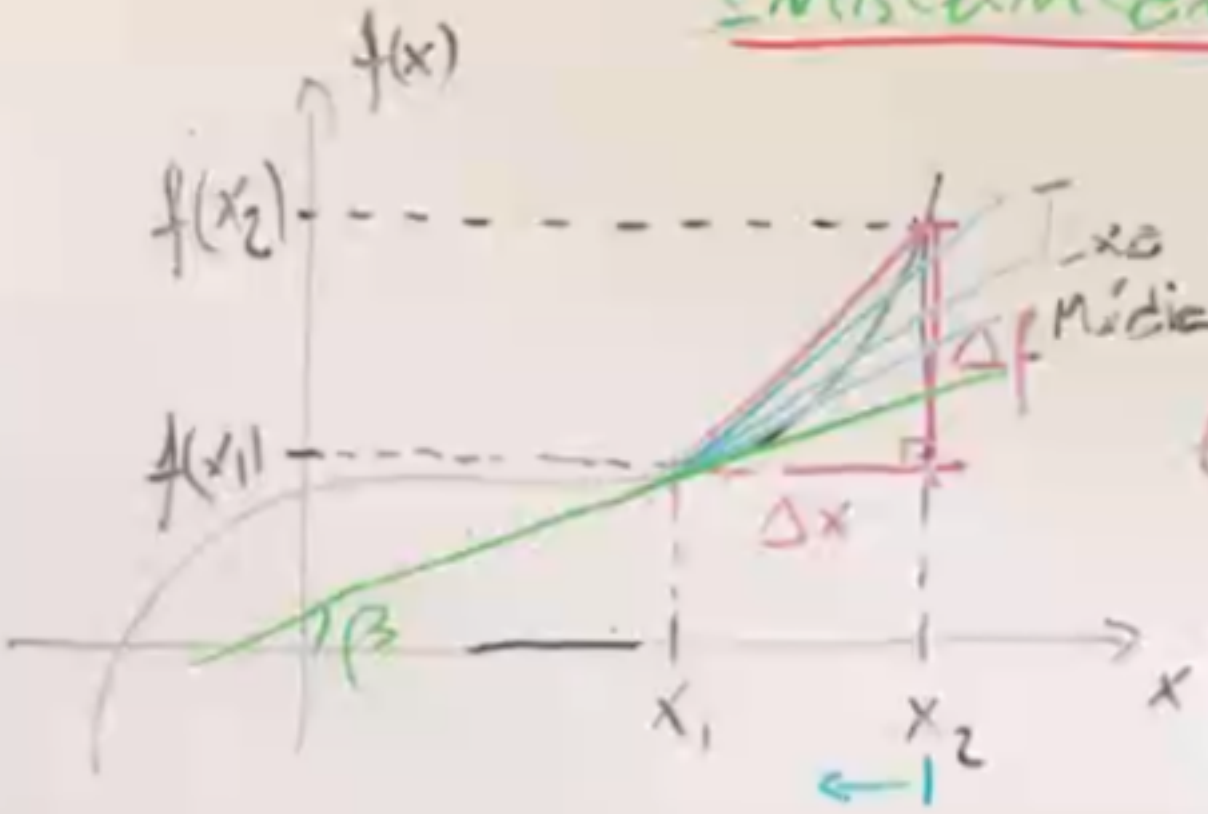
DERIVADA - Taxa de variação Instantânea de $f(x)$

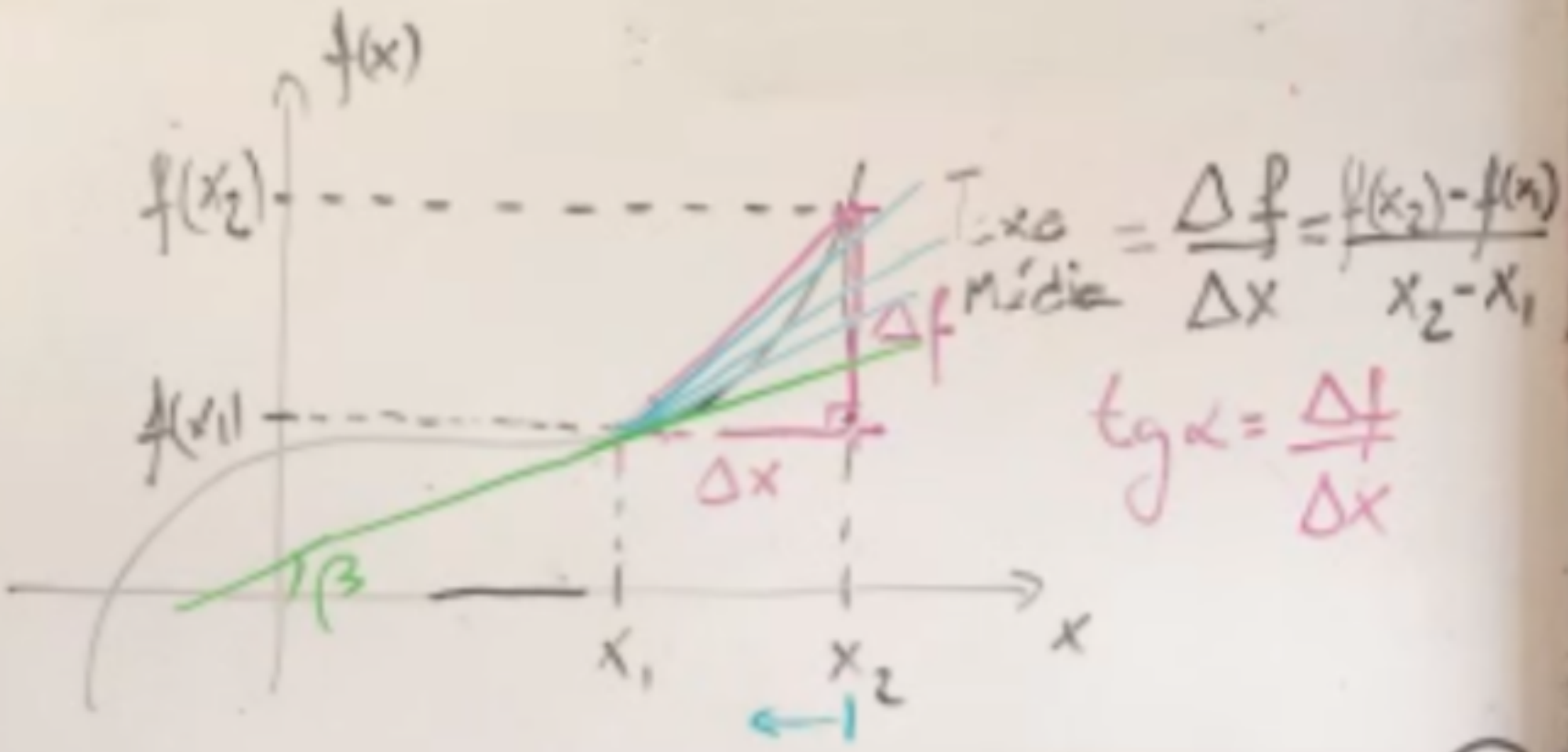


$$\text{Taxa Média} = \frac{\Delta f}{\Delta x} = \frac{f(x_2)-f(x_1)}{x_2-x_1}$$

$$tg\,\alpha = \frac{\Delta f}{\Delta x}$$

$$\frac{df}{dx}(x_1) \equiv f'(x_1) \equiv \lim_{x_2 \to x_1} \frac{f(x_2)-f(x_1)}{x_2-x_1} = \lim_{\Delta x \to 0} \frac{\Delta f}{\Delta x}$$

DERIVADA de f



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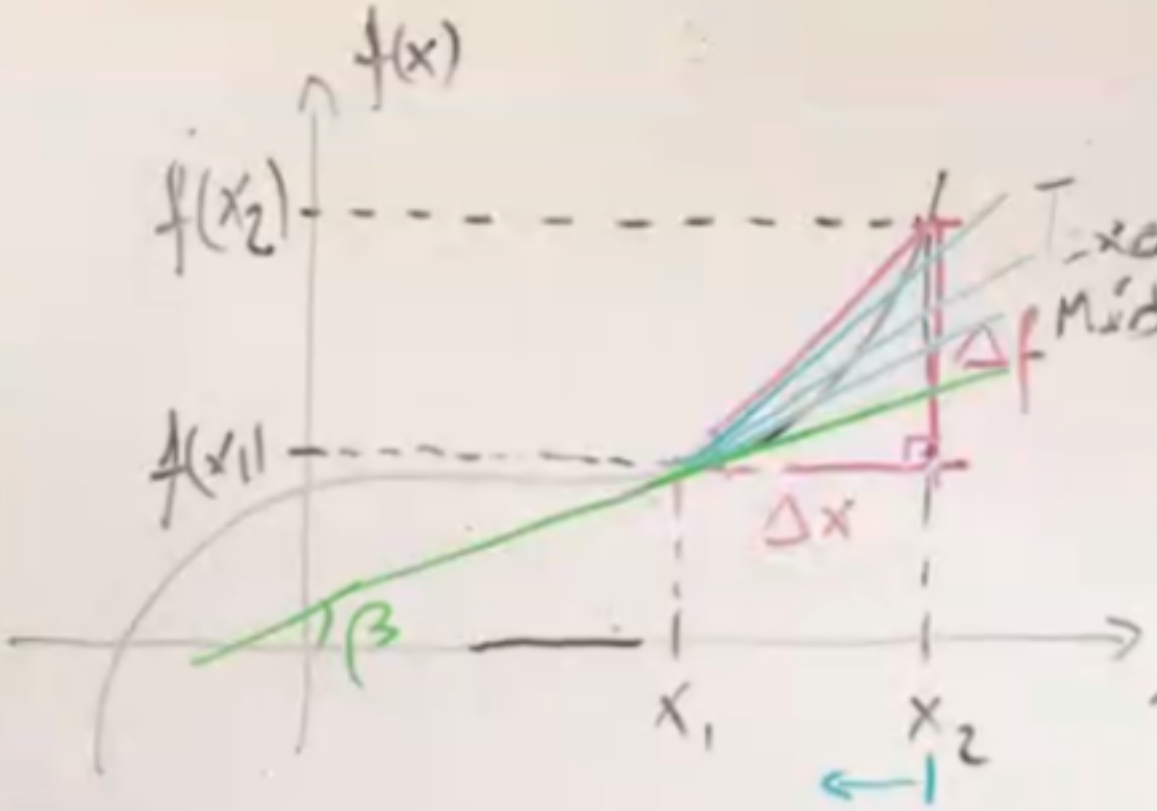
DERIVADA de f



$$\text{Taxa Média} = \frac{\Delta f}{\Delta x} = \frac{f(x_2) - f(x_1)}{x_2 - x_1}$$

$$tg\alpha = \frac{\Delta f}{\Delta x}$$

$$tg\beta = \frac{df}{dx}(x_1)$$

1

$$\frac{df}{dx}(x_1) = f'(x_1) \equiv \lim_{x_2 \to x_1} \frac{f(x_2) - f(x_1)}{x_2 - x_1} = \lim_{\Delta x \to 0} \frac{\Delta f}{\Delta x}$$

$$F_R = m\,a = m\frac{dv}{dt} =$$

$$\boxed{-bv = m\frac{dv}{dt}} = m\frac{d}{dt}\left(\frac{ds}{dt}\right) =$$

$$= m\frac{d^2s}{dt^2}$$

REPERTÓRIO DE DERIVADAS

1) $f(x) = ax + b$

$$f'(x) = \frac{df}{dx}(x) = \lim_{h \to 0} \frac{f(x+h) - f(x)}{h} =$$

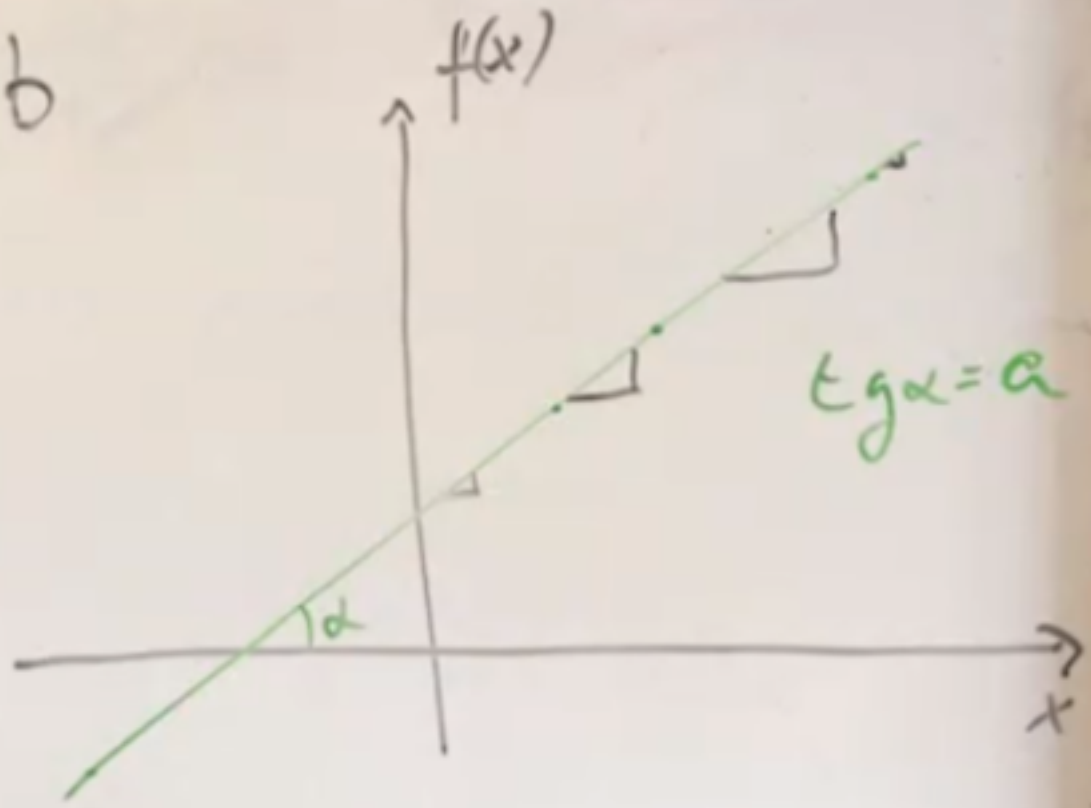
$$= \lim_{h \to 0} \frac{a(x+h) + b - ax - b}{h} = \lim_{h \to 0} \frac{ax + ah - ax}{h}$$

$$= \lim_{h \to 0} \frac{ah}{h} = \lim_{h \to 0} a = a$$

REPERTÓRIO DE DERIVADAS

1) $f(x) = ax + b$

$f'(x) = \frac{df}{dx}(x) = a$



REPERTÓRIO DE DERIVADAS

2) $f(x) = ax^2 + bx + c$

$$f'(x) = \frac{df}{dx}(x) = \lim_{h\to 0} \frac{f(x+h) - f(x)}{h} =$$

$$= \lim_{h\to 0} \frac{a(x+h)^2 + b(x+h) + c - ax^2 - bx - c}{h} =$$

$$= \lim_{h\to 0} \frac{ax^2 + 2axh + ah^2 + bx + bh - ax^2 - bx}{h} =$$

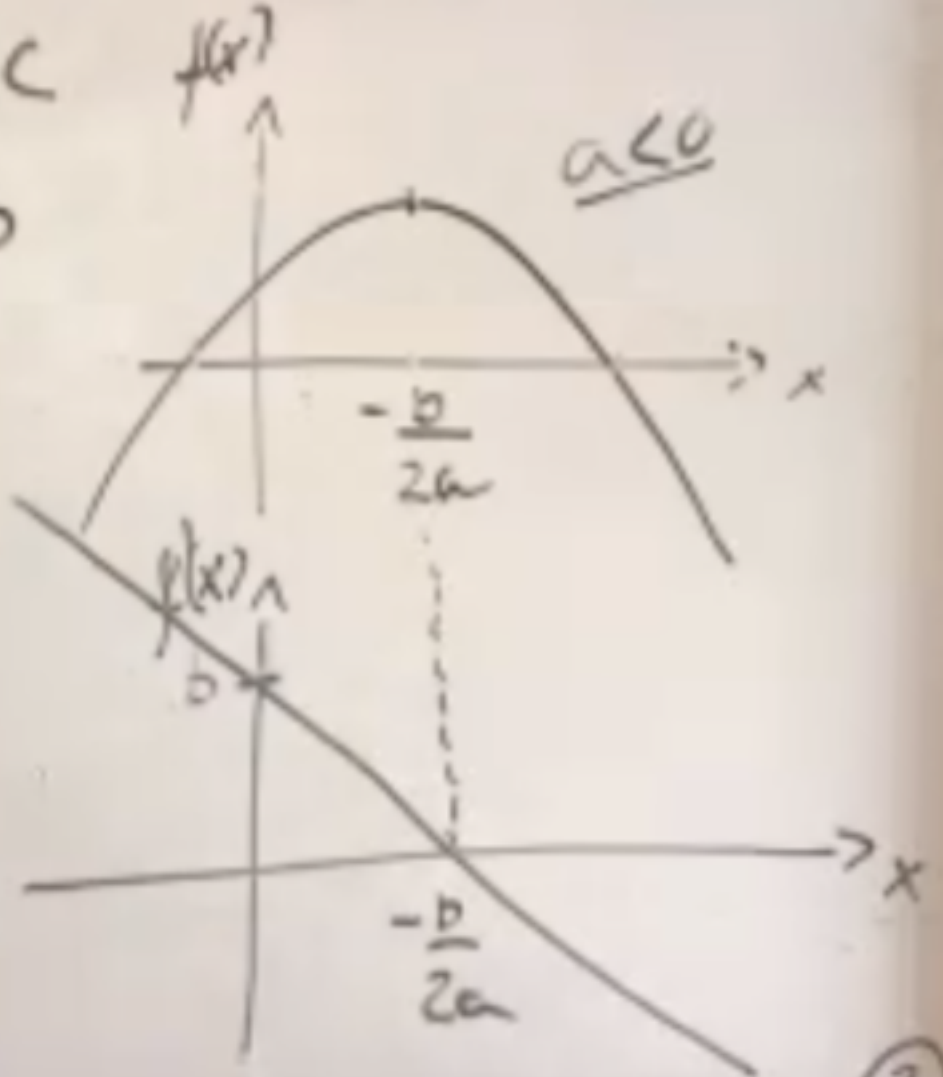
$$= \lim_{h\to 0} \frac{2axh + ah^2 + bh}{h} = \lim_{h\to 0} (2ax + b + ah) =$$

$$= 2ax + b$$

REPERTÓRIO DE DERIVADAS

2) $f(x) = ax^2 + bx + c$

$f'(x) = \frac{df(x)}{dx} = 2ax + b$



REPERTÓRIO DE DERIVADAS

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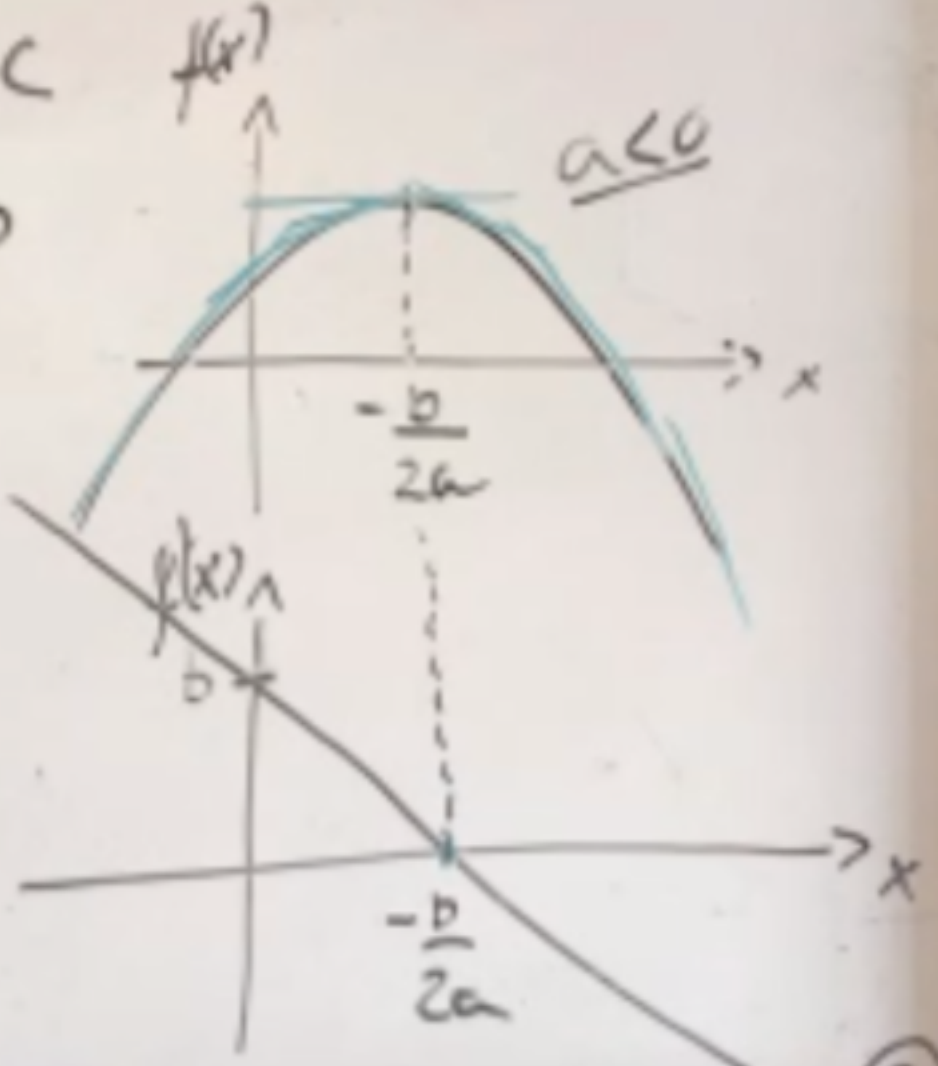
$f'(x) = \frac{df}{dx}(x) = 2ax + b$



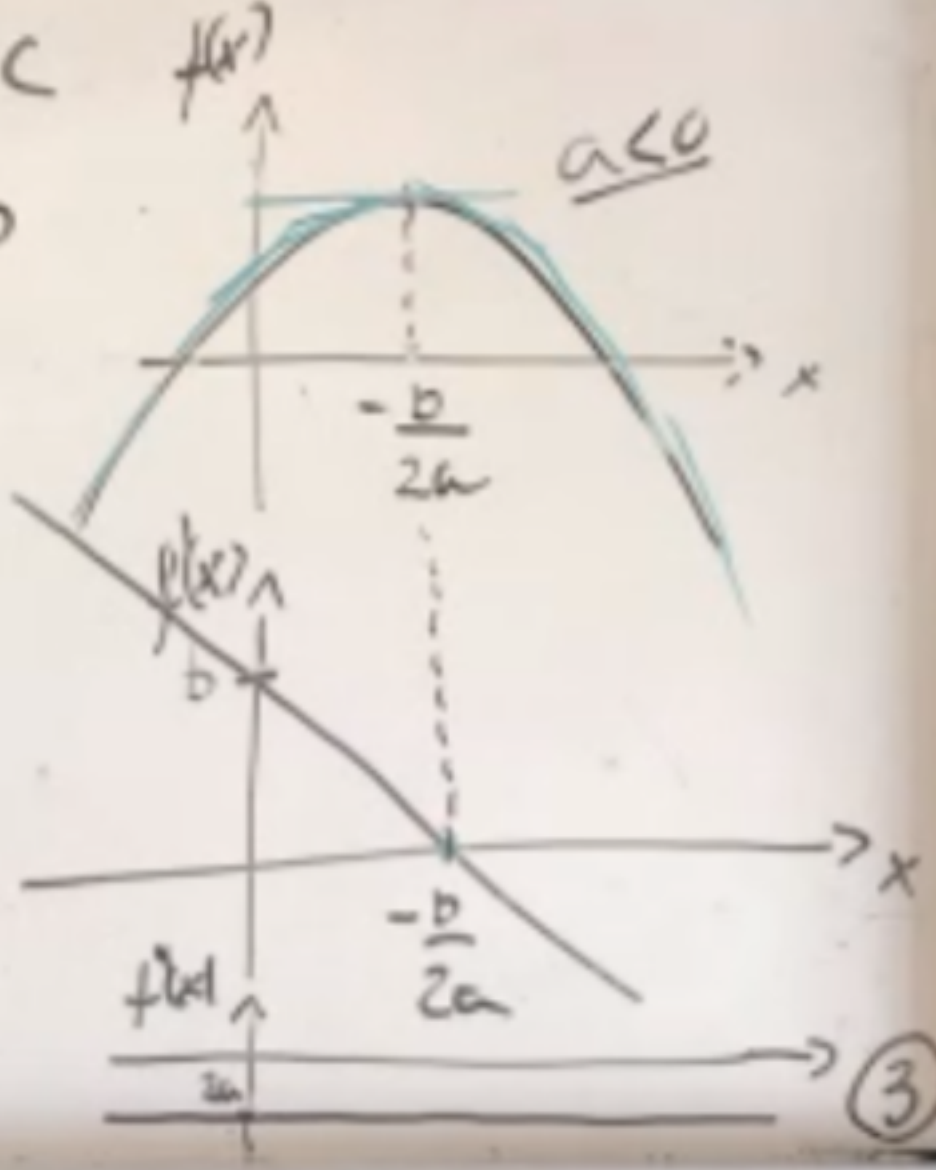
REPERTÓRIO DE DERIVADAS

2) $f(x) = ax^2 + bx + c$

$f'(x) = \frac{df}{dx}(x) = 2ax + b$

$\frac{d}{dx}\left(\frac{df}{dx}\right)(x) = 2a$

$f''(x) = \frac{d^2f}{dx^2}(x) = 2a$



REPERTÓRIO DE DERIVADAS

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$S(t) = -\frac{g}{2}t^2 + V_0 t + S_0$

$V(t) = \frac{dS}{dt}(t) = -gt + V_0$

$a(t) = \frac{dV}{dt}(t) = \frac{d^2S}{dt^2}(t) = -g$

REPERTÓRIO DE DERIVADAS

2) $f(x) = ax^2 + bx + c$

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