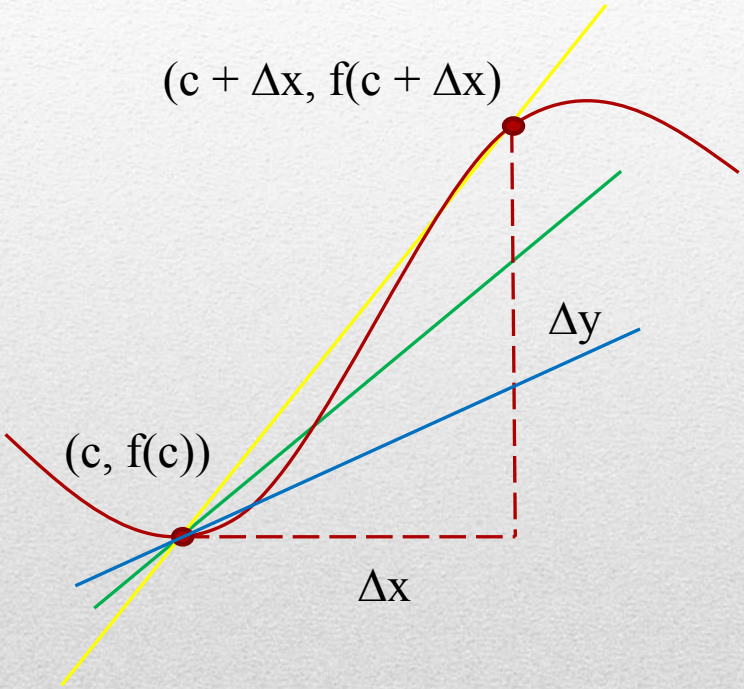
ПРОИЗВОДНЫЕ

И ПРАВИЛА НАХОЖДЕНИЯ ПРОИЗВОДНЫХ

Производное: Геометрическое объяснение



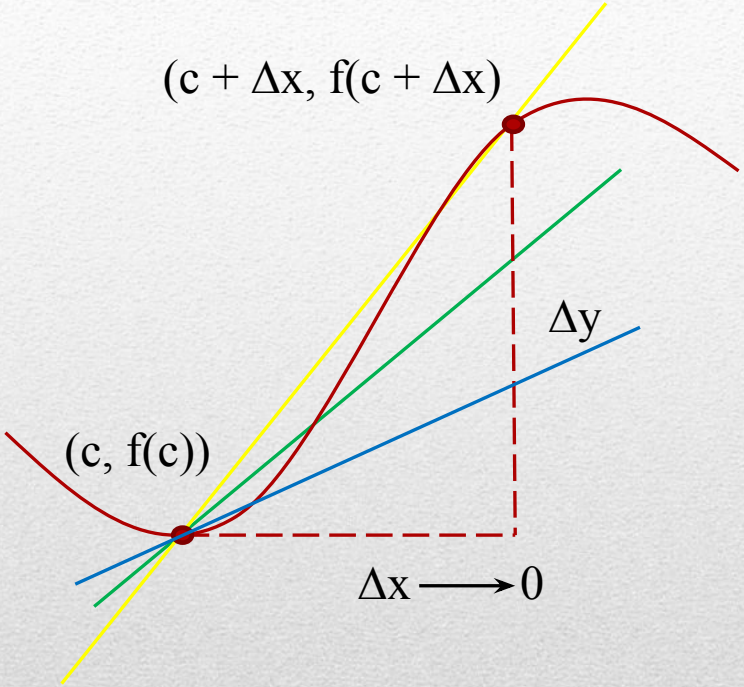
$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{f(x_2) - f(x_1)}{x_2 - x_1}$$

$$m = \frac{f(c + \Delta x) - f(c)}{(c + \Delta x) - c}$$

$$m = \frac{f(c + \Delta x) - f(c)}{\Delta x}$$

Производное: Геометрическое объяснение



$$m = \lim_{\Delta x \to 0} \frac{f(c+\Delta x) - f(c)}{\Delta x}$$

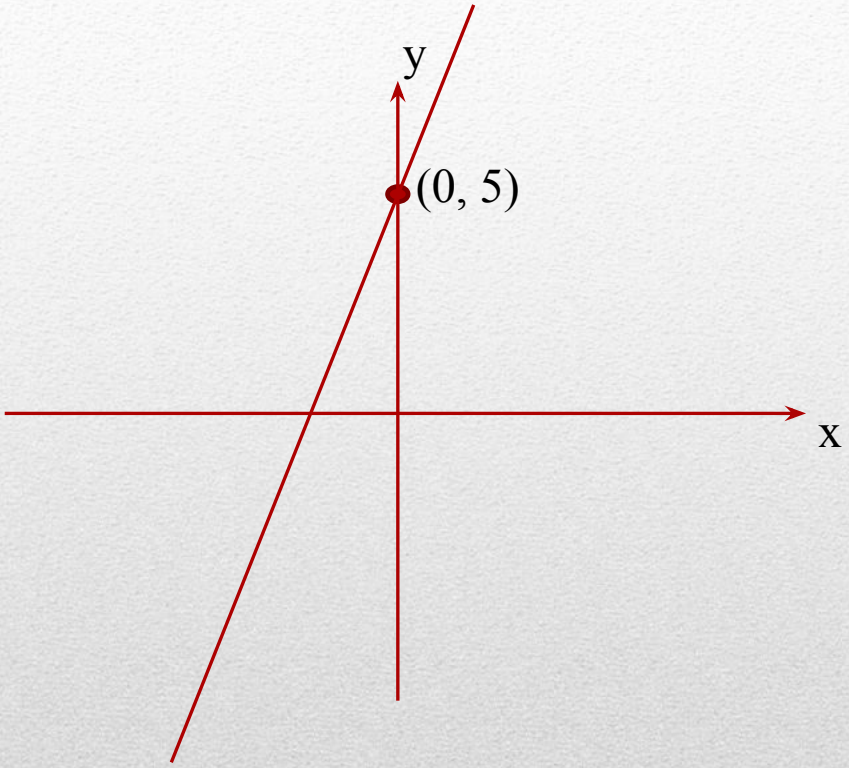
$$m = \lim_{\Delta x \to 0} \frac{f(c+\Delta x) - f(c)}{\Delta x}$$

$$\rightarrow \quad f(x) = 3x + 5, (2,11)$$

$$m_t = \lim_{\Delta x \to 0} \frac{(3(2+\Delta x) - (3(2)+5)}{\Delta x}$$

$$m_t = \lim_{\Delta x \to 0} \frac{(6+3\Delta x+5-11)}{\Delta x}$$

$$m_t = \lim_{\Delta x \to 0} \frac{3\Delta x}{\Delta x} = \lim_{\Delta x \to 0} (3) = 3$$

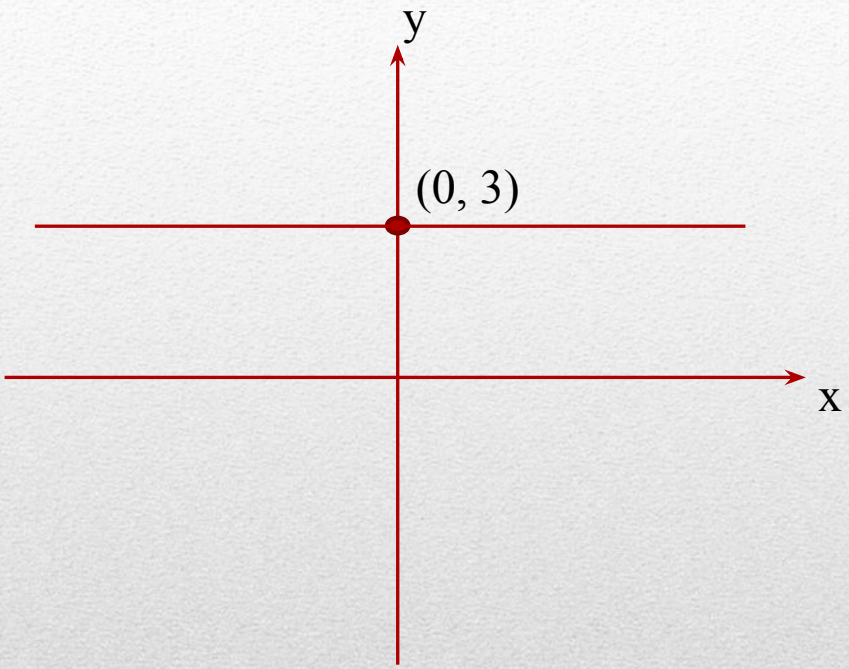


$$C' = 0$$

$$\rightarrow f(x) = 3$$

Так как, это горизонтальная линия $\longrightarrow m = 0$

следовательно $\longrightarrow f'(3) = 0$



$$f'(x^n) = nx^{n-1}$$

$\rightarrow f(x) = 2x^3 + 3x^2 + 4x$

$f'(x) = 2 \cdot 3 \cdot x^{3-1} + 3 \cdot 2 \cdot x^{2-1} + 4 \cdot 1 \cdot x^{1-1}$

$f'(x) = 6 \cdot x^2 + 6 \cdot x^1 + 4 \cdot x^0$

$x^0 = 1$

$f'(x) = 6x^2 + 6x + 4$

$\rightarrow f(x) = 3x^2 - 2x + 1$

$f'(x) = 3 \cdot 2 \cdot x^{2-1} - 2 \cdot x^{1-1} + 0$

$f'(x) = 6x^1 - 2x^0$

$x^0 = 1$

$f'(x) = 6x - 2$

$$\boxed{\left(\sqrt{x}\right)' = \frac{1}{2\sqrt{x}}}$$

$\rightarrow \quad f(x) = \sqrt{x^3}$

$$f'(x) = \frac{1}{2\sqrt{x^3}}$$

$\rightarrow \quad f(y) = \sqrt{y^7}$

$$f'(y) = \frac{1}{2\sqrt{y^7}}$$