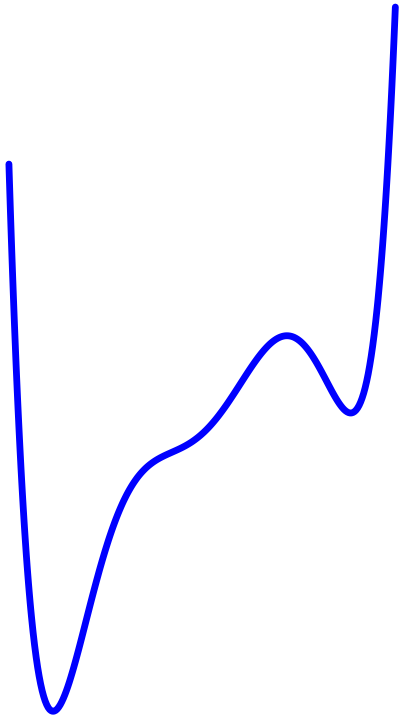
매개변수 곡선의 미분
(Differential of the parameter curve)

Differential of the parameter curve

Start End

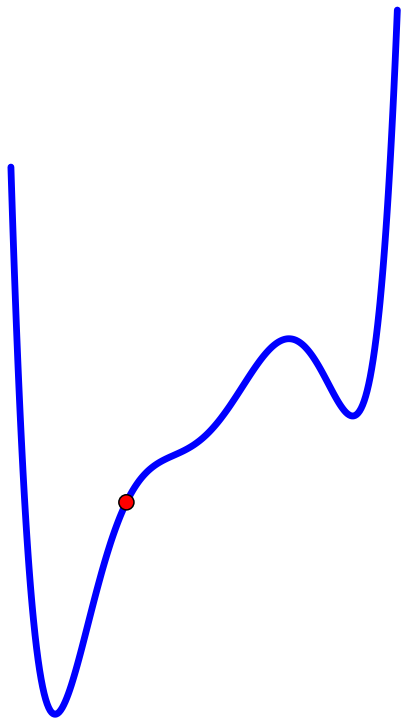
Differential of the parameter curve

Start End



Differential of the parameter curve

Start End



Differential of the parameter curve

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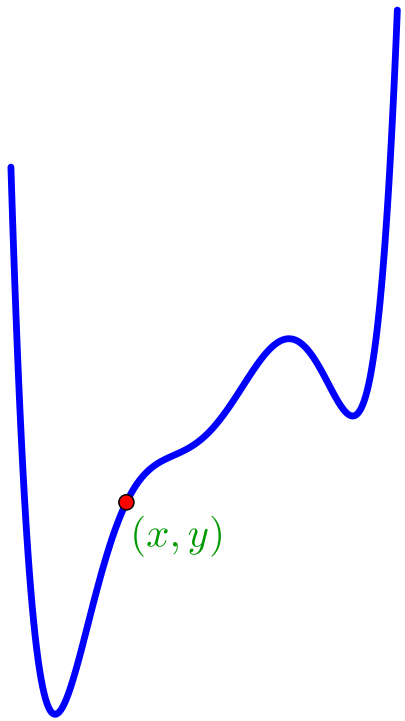

Differential of the parameter curve

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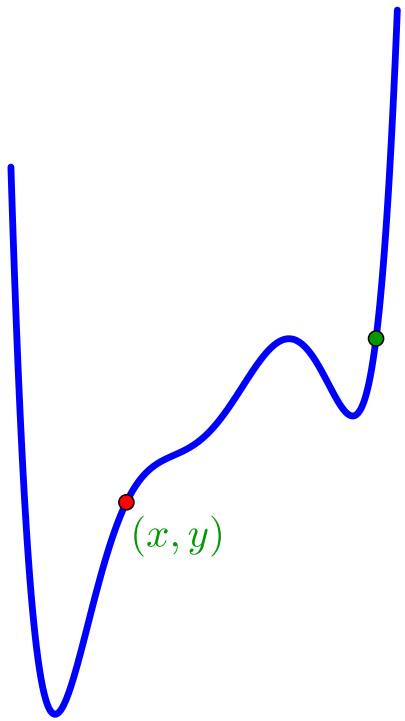

Differential of the parameter curve

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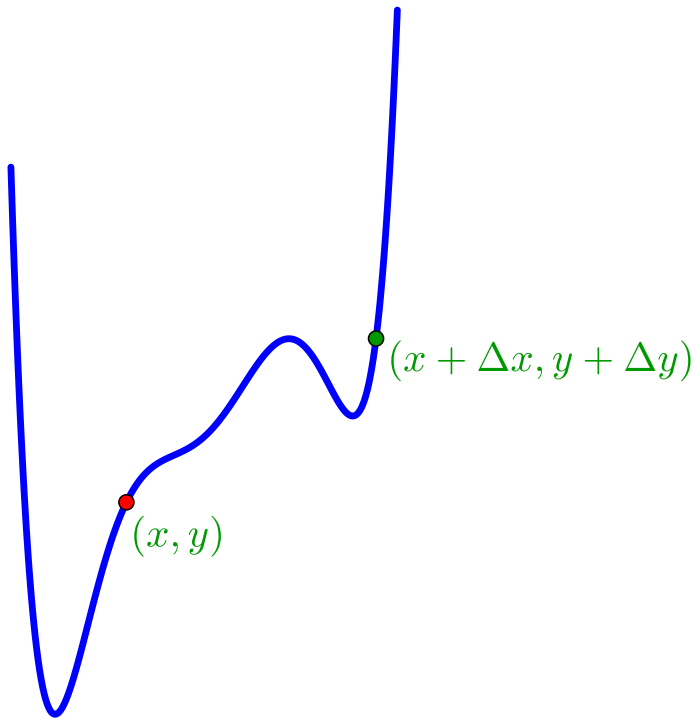

Differential of the parameter curve

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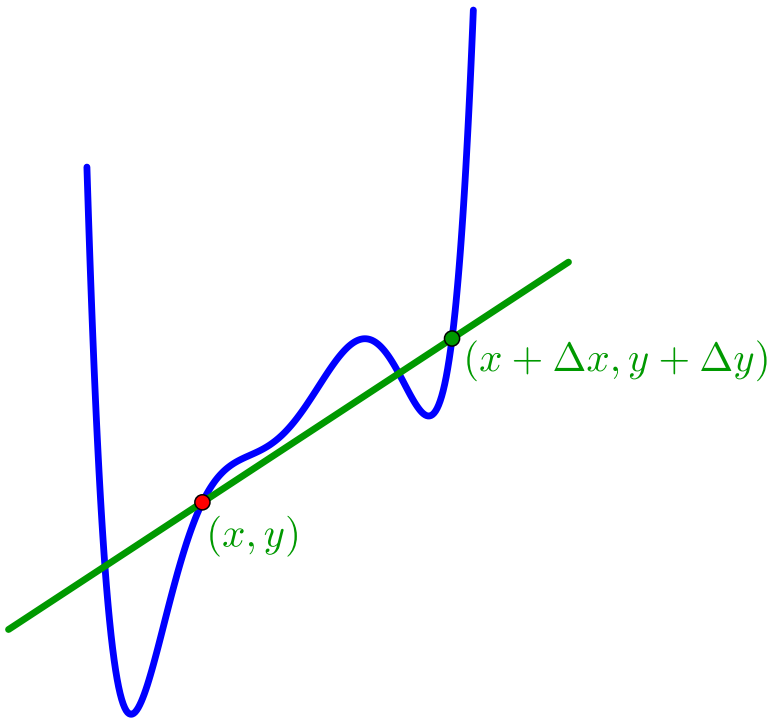

Differential of the parameter curve

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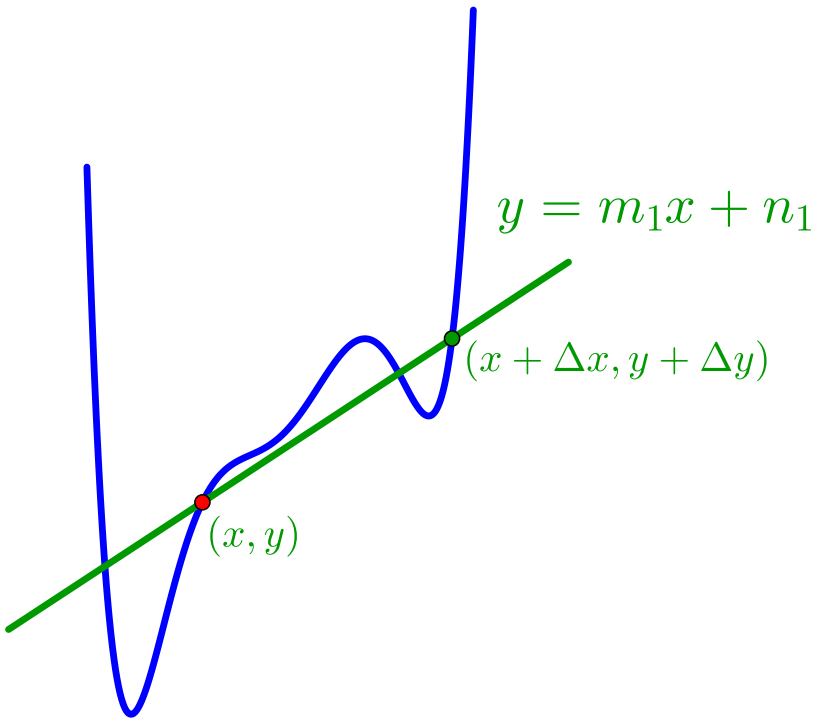

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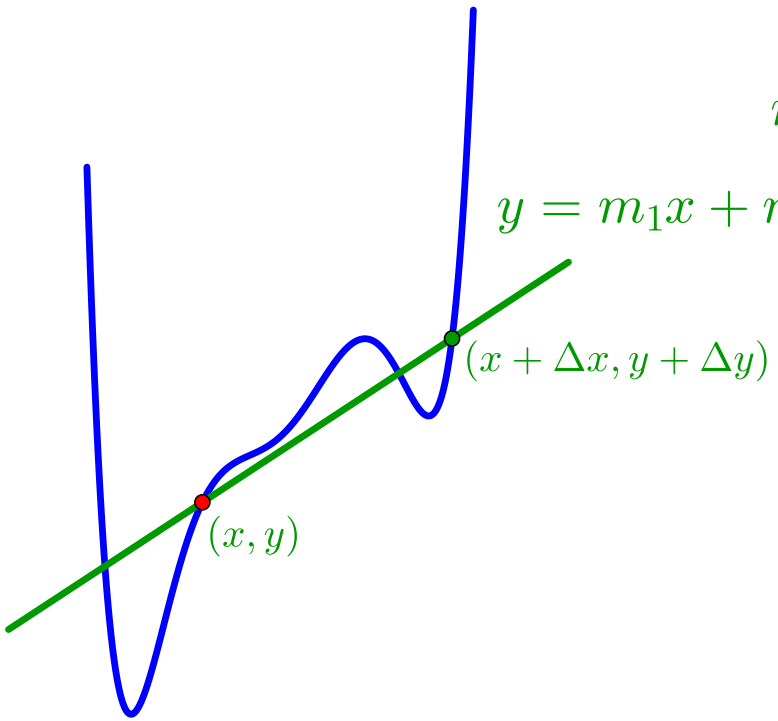
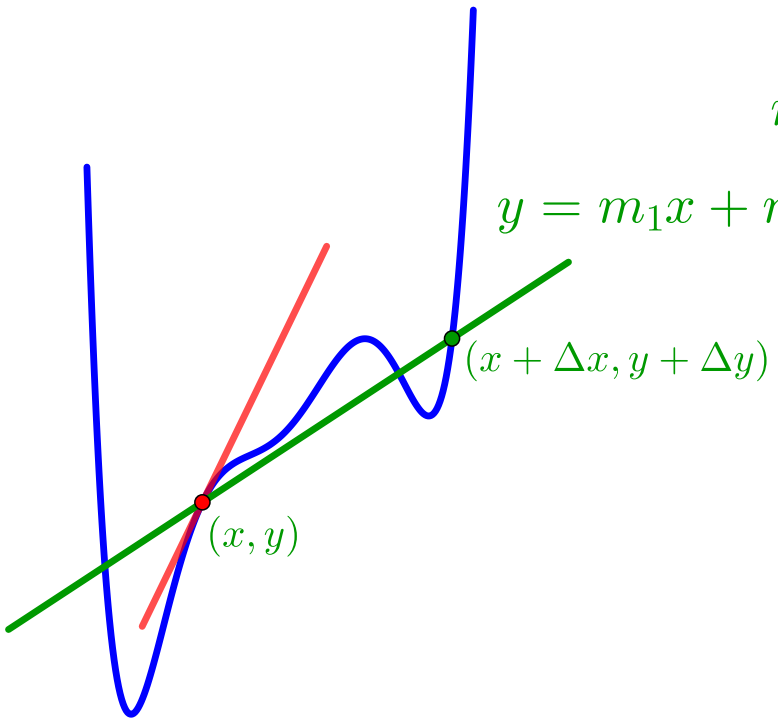


$$m_1 = \frac{\Delta y}{\Delta x}$$

Differential of the parameter curve

Start End



Differential of the parameter curve

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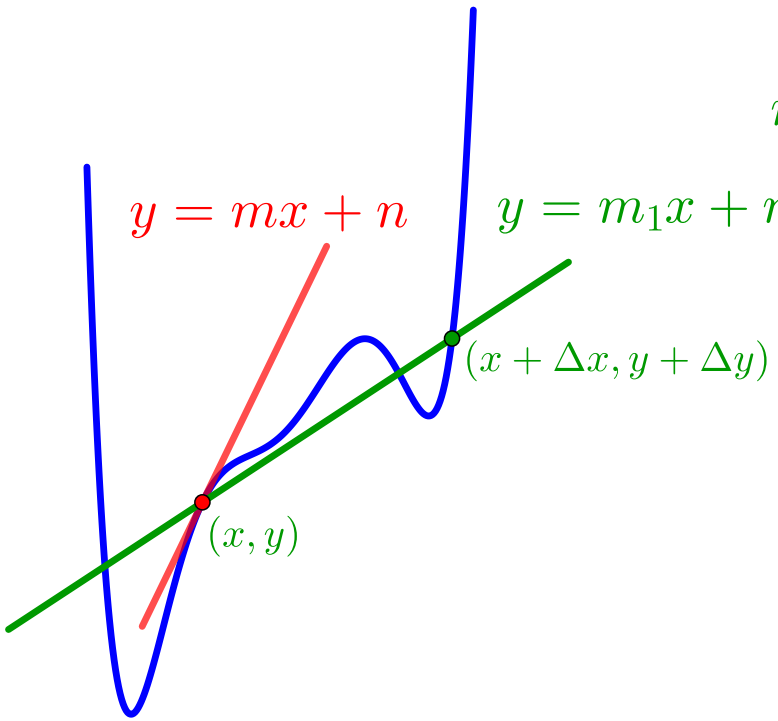
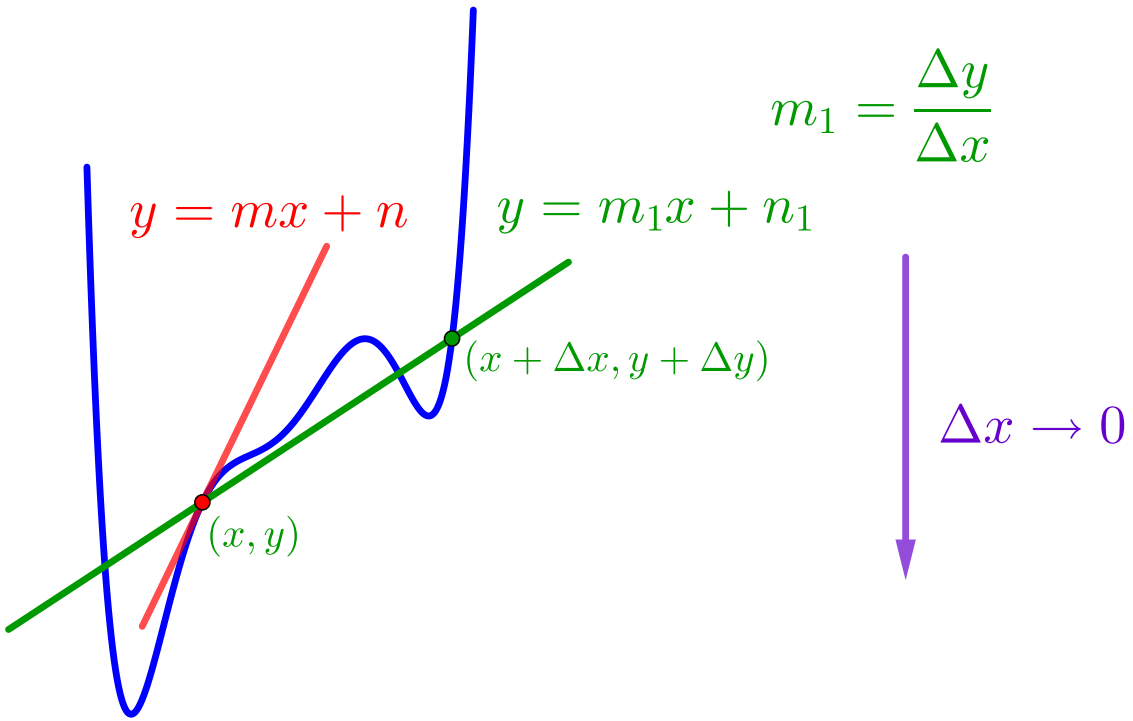


$$m_1 = \frac{\Delta y}{\Delta x}$$

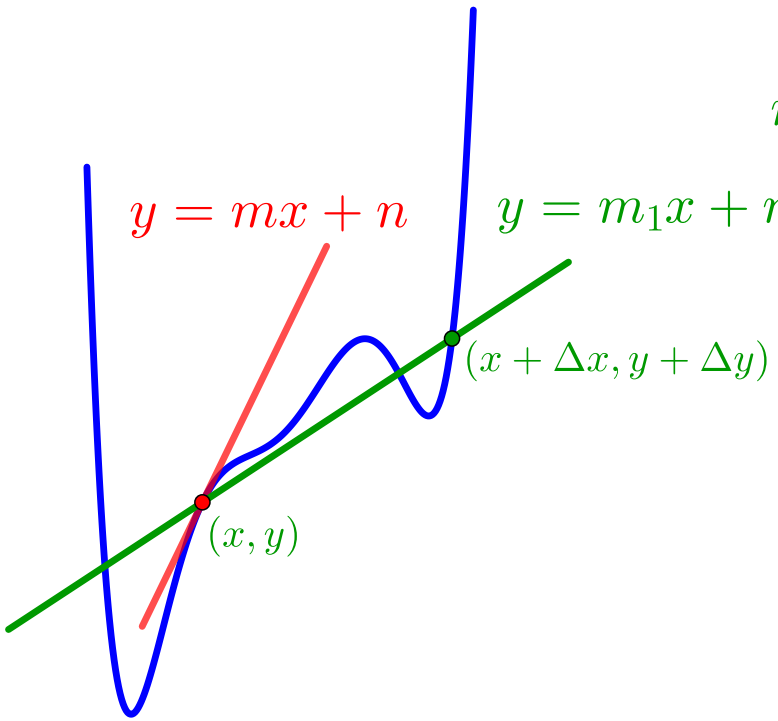


$$m_1 = \frac{\Delta y}{\Delta x}$$

$$\Delta x \to 0$$

Differential of the parameter curve

Start End



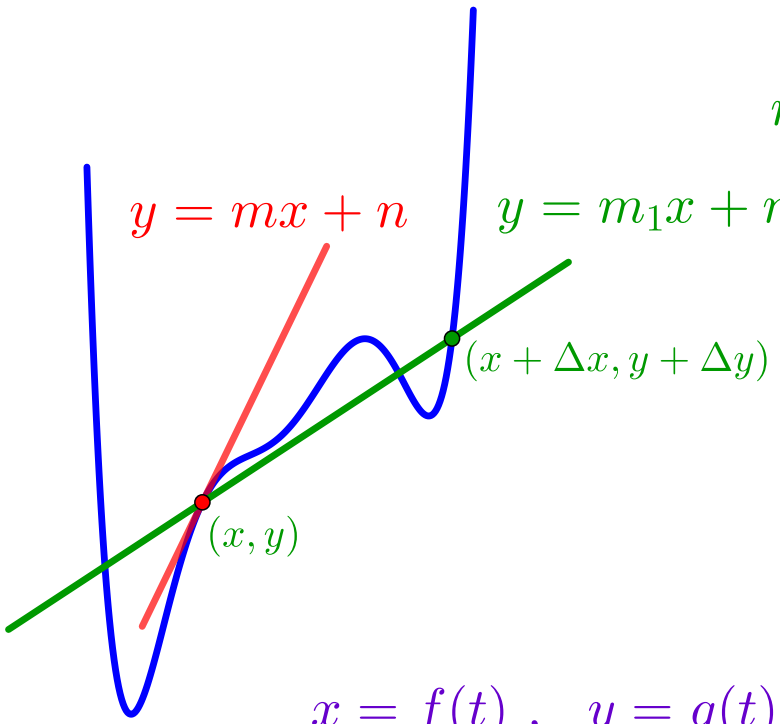
$$m_1 = \frac{\Delta y}{\Delta x}$$

$$\Delta x \to 0$$

$$m = \frac{dy}{dx}$$

Differential of the parameter curve

Start End



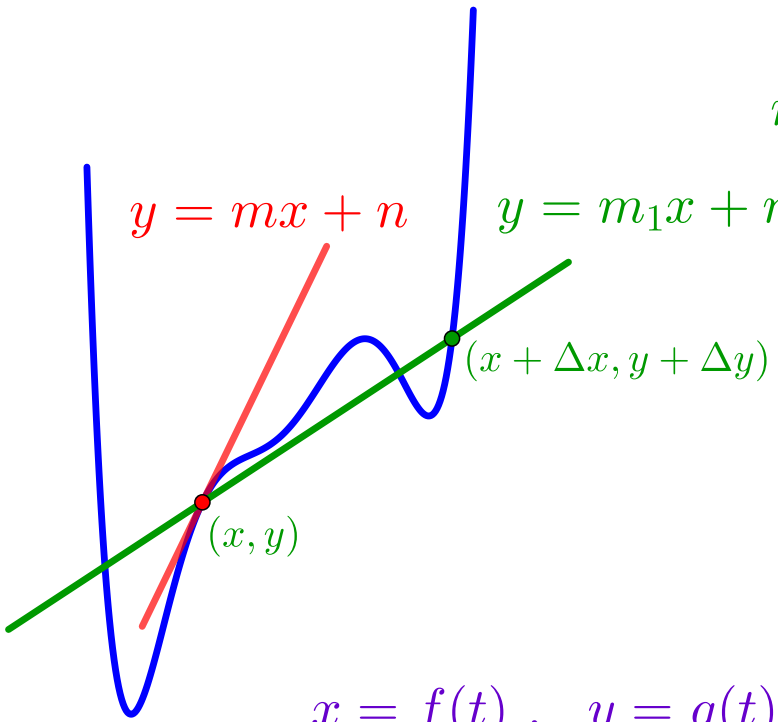
$$m_1 = \frac{\Delta y}{\Delta x}$$

$$\Delta x \to 0$$

$$x = f(t)\ ,\quad y = g(t) \qquad m = \frac{dy}{dx}$$

Differential of the parameter curve

Start End



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Differential of the parameter curve

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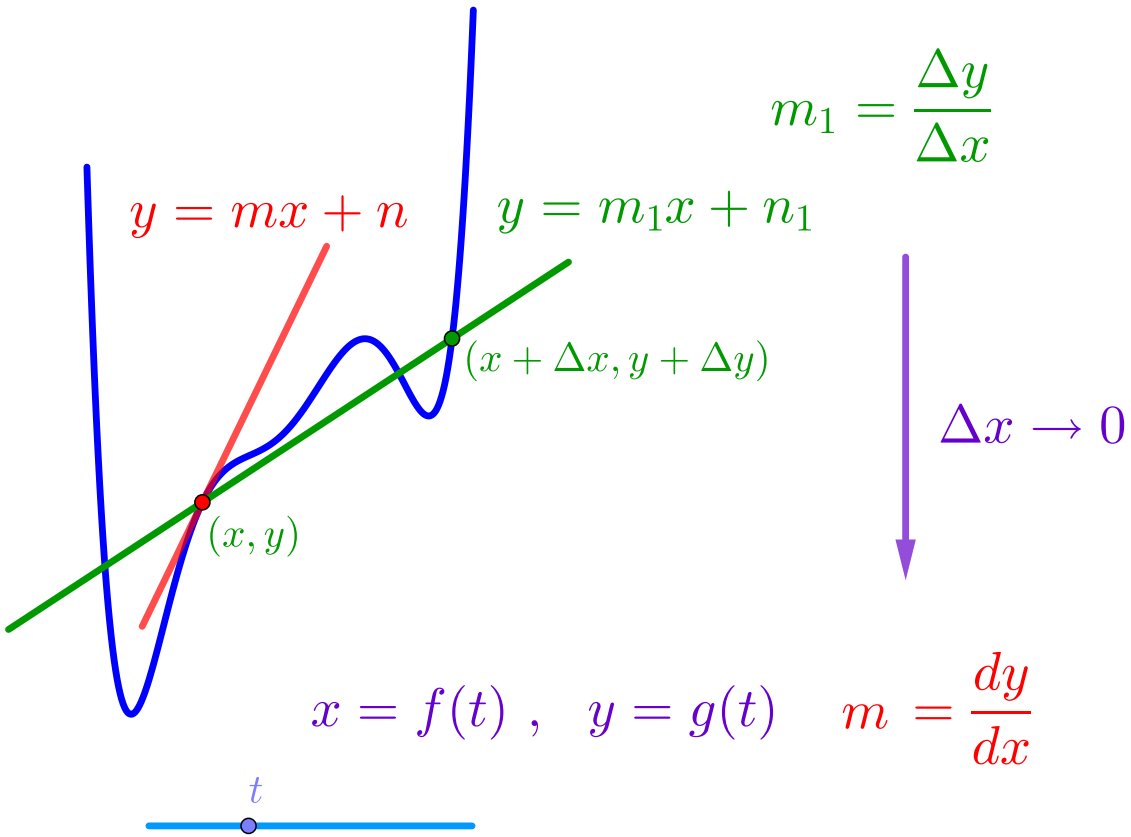

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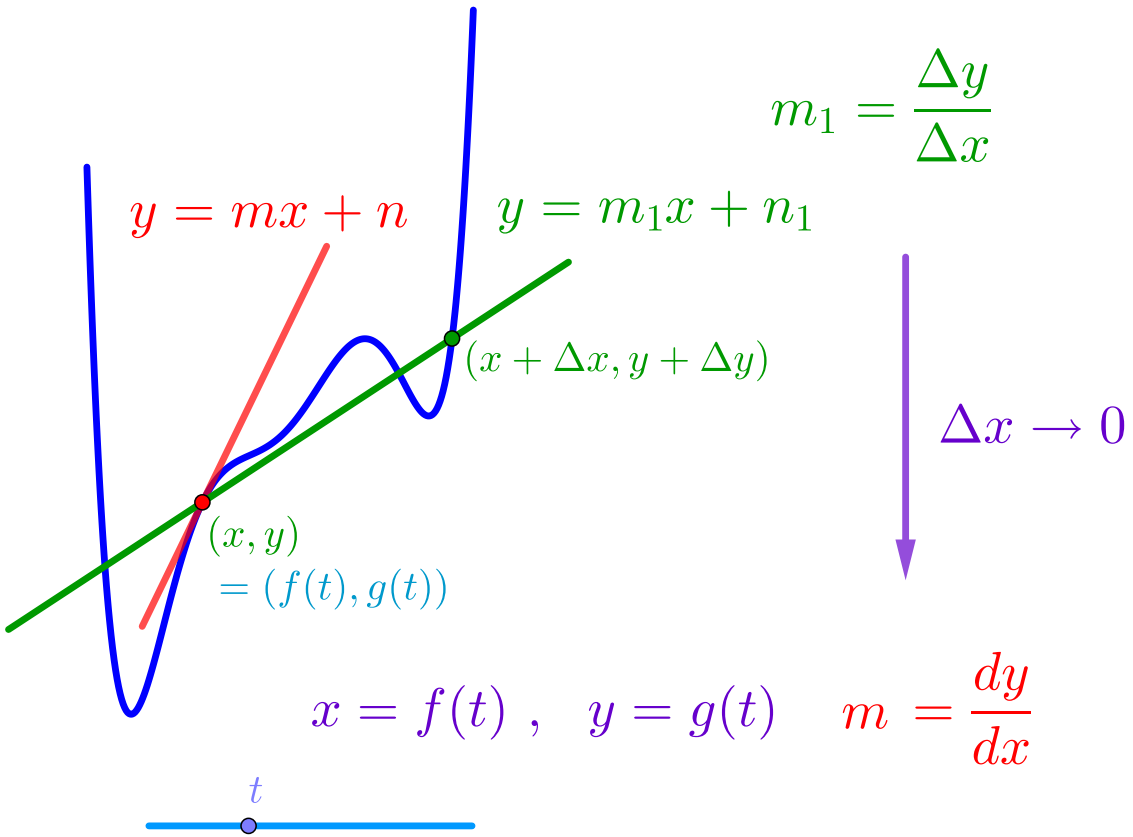
Differential of the parameter curve

Start End



Differential of the parameter curve

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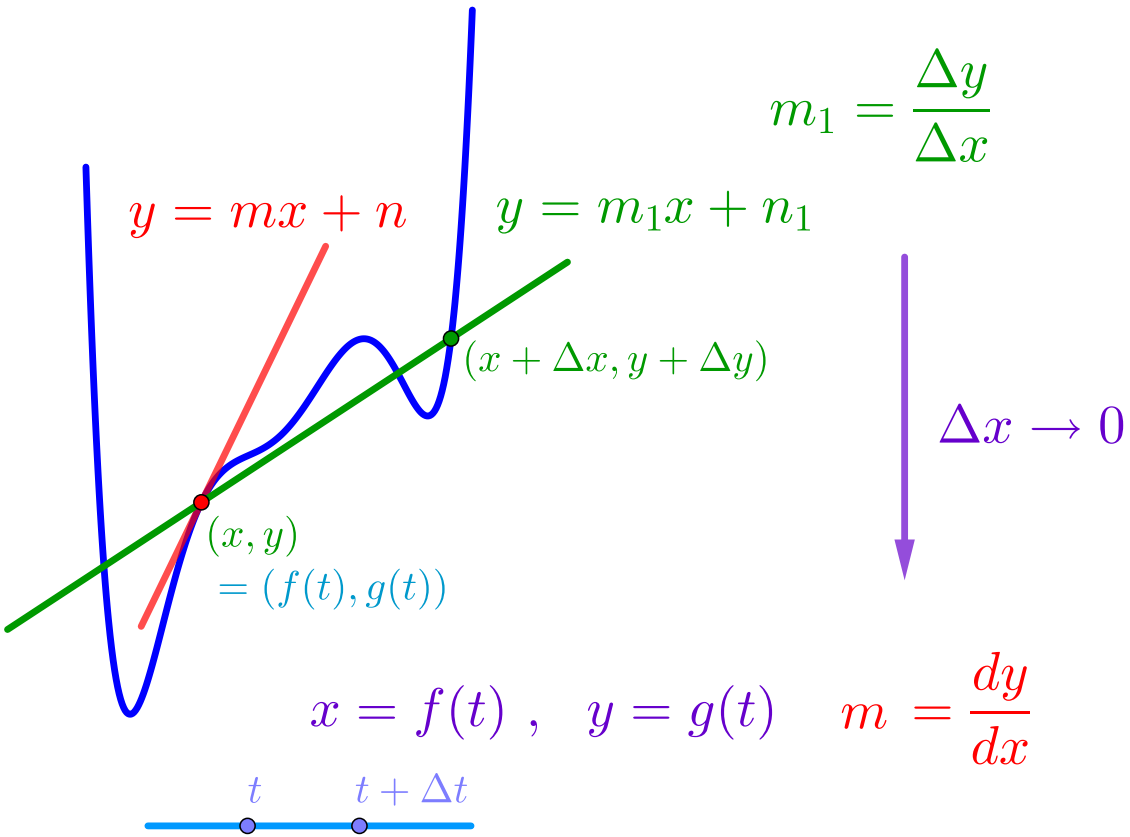


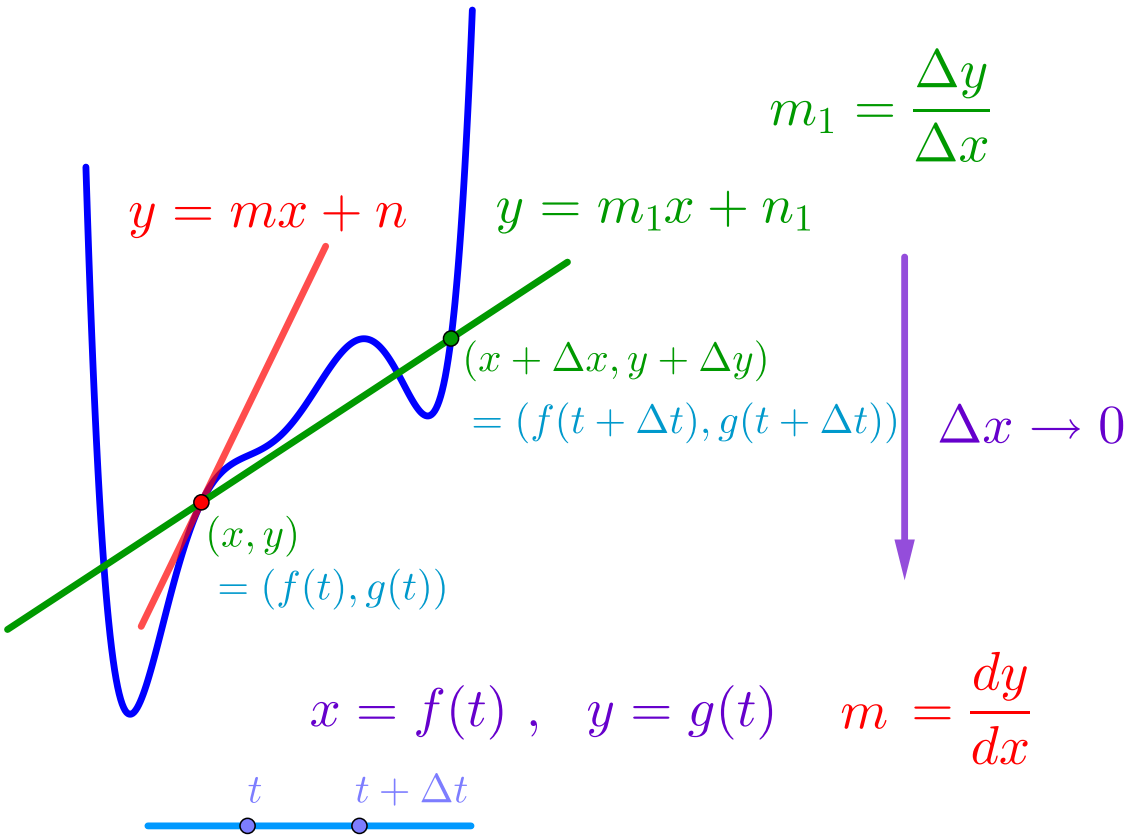
$$m_1 = \frac{\Delta y}{\Delta x}$$

$$\Delta x \to 0$$

$$x = f(t)\ ,\quad y = g(t) \qquad m = \frac{dy}{dx}$$

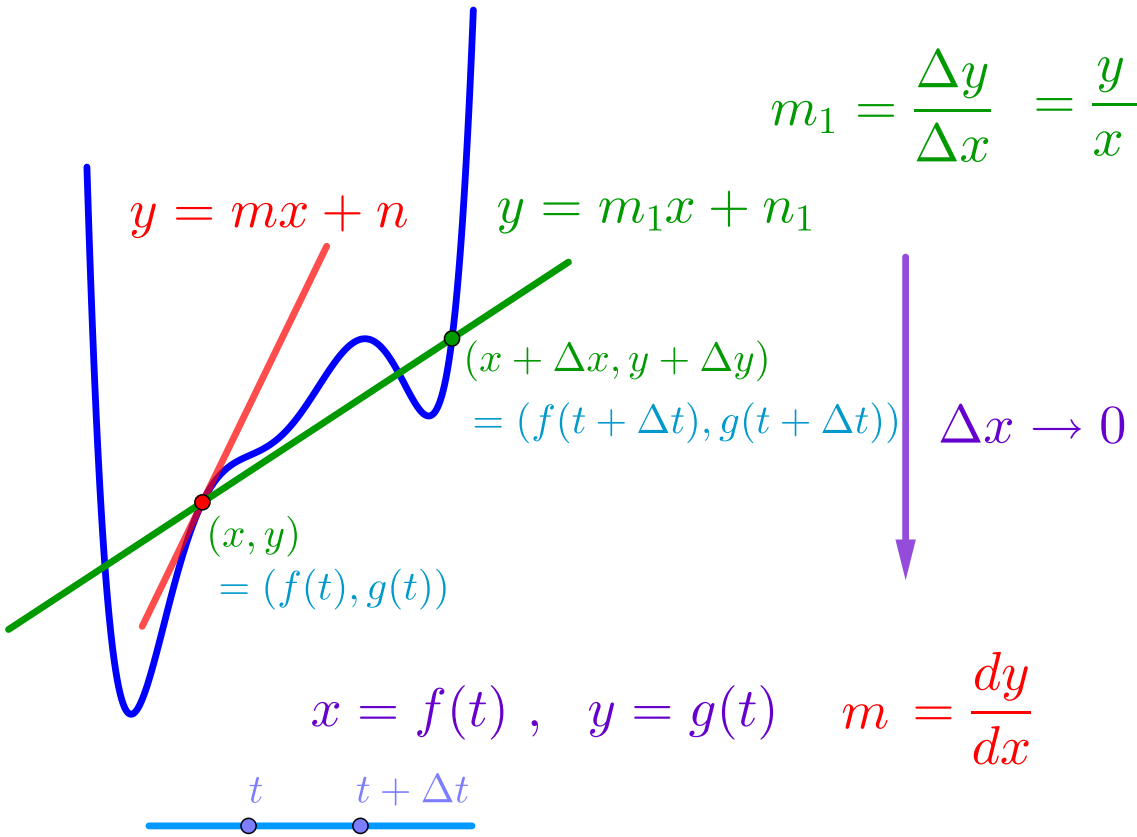
Differential of the parameter curve

Start End



Differential of the parameter curve

Start End

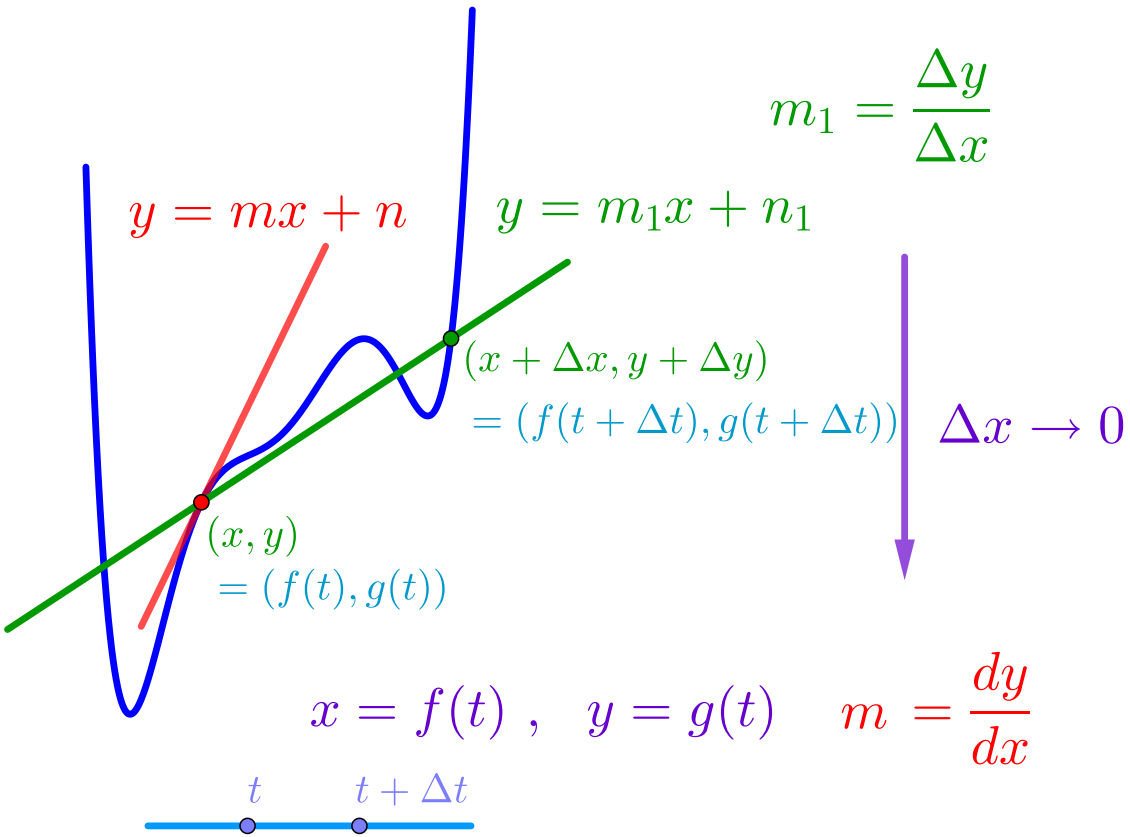


$$m_1 = \frac{\Delta y}{\Delta x} = \frac{y + \Delta y - y}{x + \Delta x - x}$$

$$x = f(t)\ , \quad y = g(t) \qquad m = \frac{dy}{dx}$$

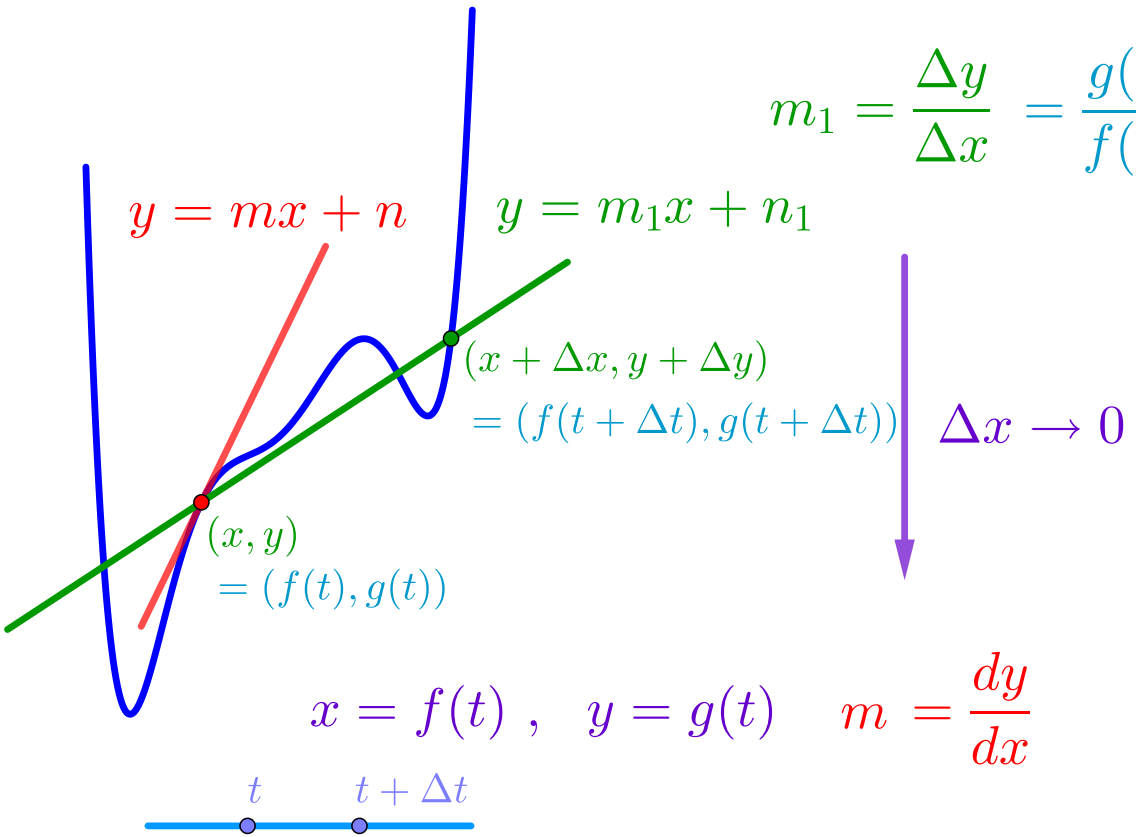
Differential of the parameter curve

Start End



Differential of the parameter curve

Start End

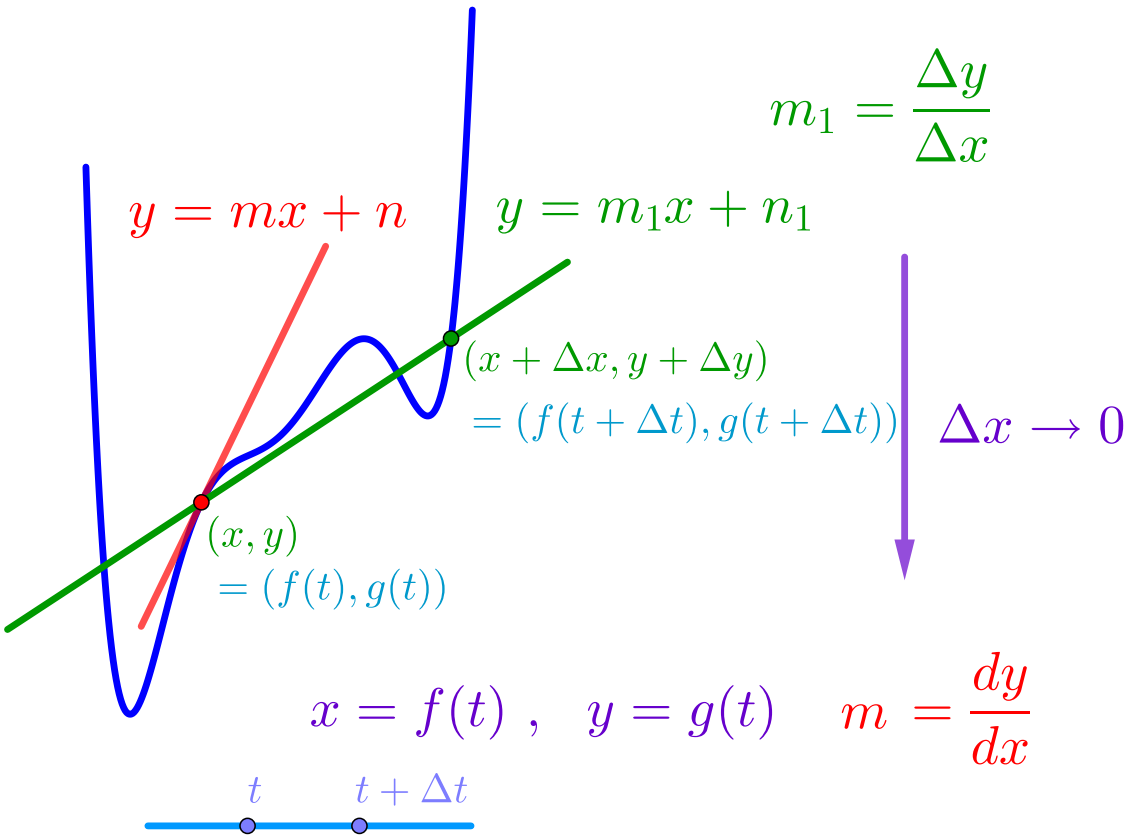


$$m_1 = \frac{\Delta y}{\Delta x} = \frac{g(t + \Delta t) - g(t)}{f(t + \Delta t) - f(t)}$$

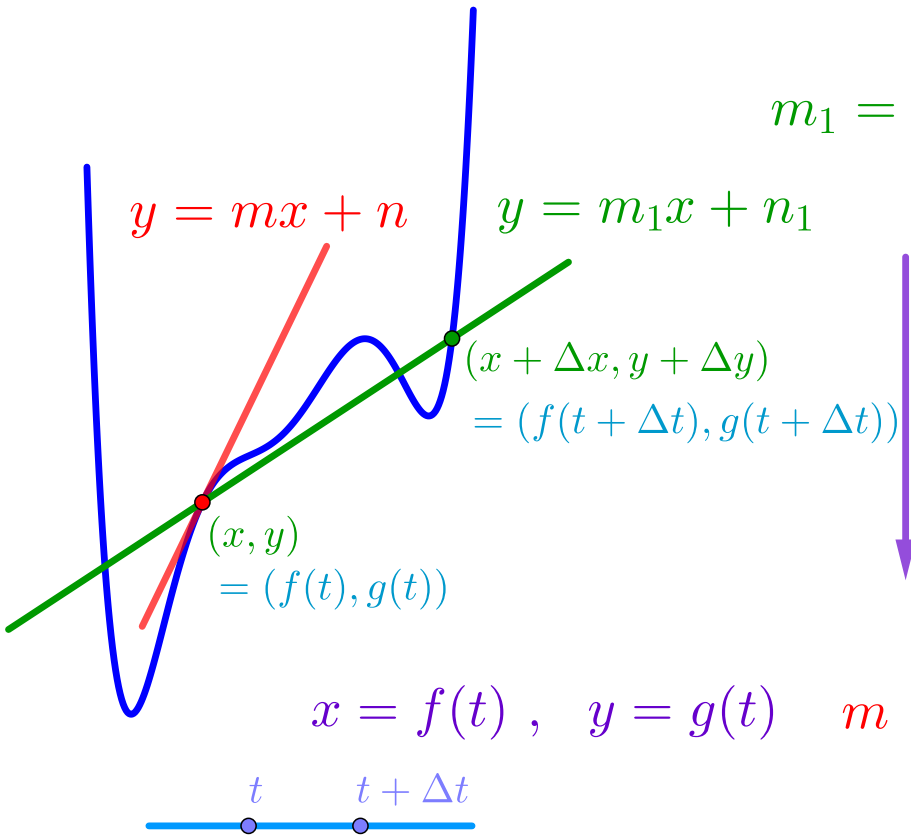
$$x = f(t)\ , \quad y = g(t) \qquad m = \frac{dy}{dx}$$

Differential of the parameter curve

Start End



Start End



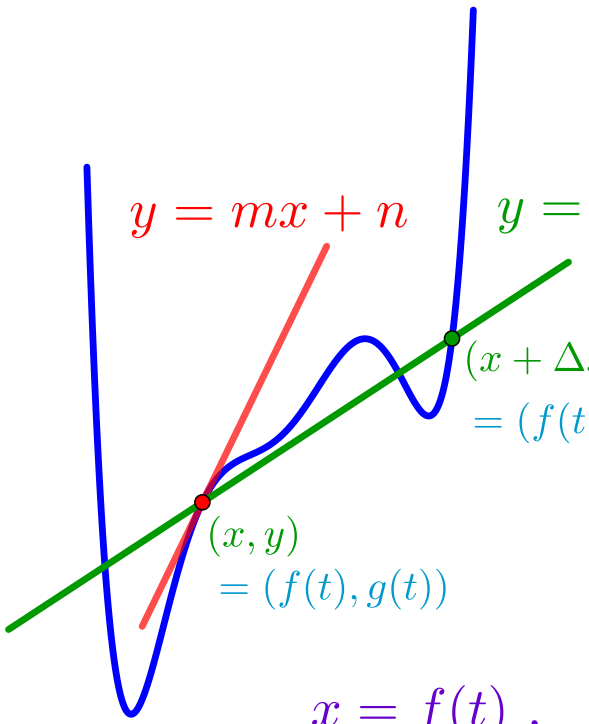
$$m_1 = \frac{\Delta y}{\Delta x} = \frac{\dfrac{g(t+\Delta t) - g(t)}{t + \Delta t - t}}{\dfrac{f(t+\Delta t) - f(t)}{t + \Delta t - t}}$$

$\Delta x \to 0$

$$x = f(t)\ , \quad y = g(t) \qquad m = \frac{dy}{dx}$$

Differential of the parameter curve

Start End



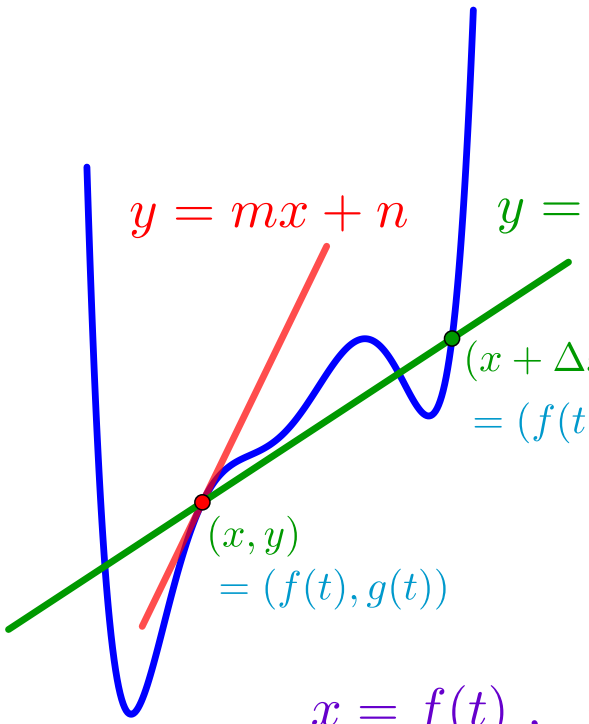
$$m_1 = \frac{\Delta y}{\Delta x} = \frac{\dfrac{g(t+\Delta t) - g(t)}{t + \Delta t - t}}{\dfrac{f(t+\Delta t) - f(t)}{t + \Delta t - t}}$$

$\Delta x \to 0$ $\Delta t \to 0$

$$x = f(t)\ , \quad y = g(t) \qquad m = \frac{dy}{dx}$$

Differential of the parameter curve

Start End



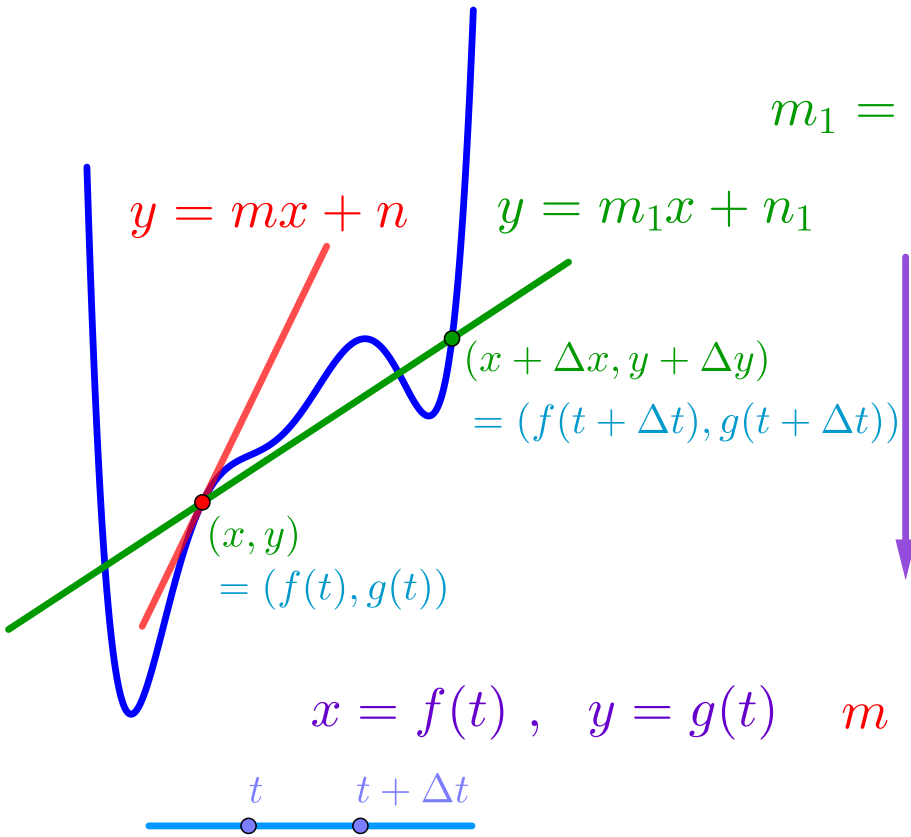
$$m_1 = \frac{\Delta y}{\Delta x} = \frac{\frac{g(t+\Delta t) - g(t)}{t + \Delta t - t}}{\frac{f(t+\Delta t) - f(t)}{t + \Delta t - t}}$$

$\Delta x \to 0$ $\quad$ $\Delta t \to 0$

if $\exists \frac{dy}{dx}$, $\exists \frac{dy}{dt}$, $\exists \frac{dx}{dt} \neq 0$

$$x = f(t) \ , \quad y = g(t) \qquad m = \frac{dy}{dx}$$

Start End



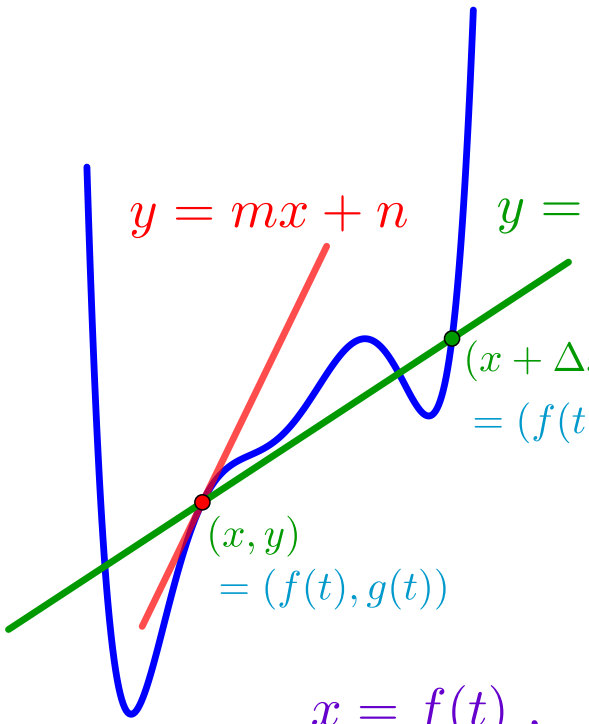
$$m_1 = \frac{\Delta y}{\Delta x} = \frac{\dfrac{g(t+\Delta t) - g(t)}{t + \Delta t - t}}{\dfrac{f(t+\Delta t) - f(t)}{t + \Delta t - t}}$$

$\Delta x \to 0$ $\qquad$ $\Delta t \to 0$

if $\exists \frac{dy}{dx}$, $\exists \frac{dy}{dt}$, $\exists \frac{dx}{dt} \neq 0$

$$x = f(t)\ , \quad y = g(t) \qquad m = \frac{dy}{dx} = \frac{\dfrac{dy}{dt}}{\dfrac{dx}{dt}}$$

Start End



$$m_1 = \frac{\Delta y}{\Delta x} = \frac{\dfrac{g(t+\Delta t) - g(t)}{t + \Delta t - t}}{\dfrac{f(t+\Delta t) - f(t)}{t + \Delta t - t}}$$

$\Delta x \to 0$ $\qquad$ $\Delta t \to 0$

if $\exists \frac{dy}{dx}$, $\exists \frac{dy}{dt}$, $\exists \frac{dx}{dt} \neq 0$

$$x = f(t)\ , \quad y = g(t) \qquad m = \frac{dy}{dx} = \frac{\dfrac{dy}{dt}}{\dfrac{dx}{dt}}$$

$$\therefore \boldsymbol{\frac{dy}{dx} = \frac{\dfrac{dy}{dt}}{\dfrac{dx}{dt}}} \quad \left(\textbf{if } \exists \frac{dy}{dx}\ ,\ \exists \frac{dy}{dt}\ ,\ \exists \frac{dx}{dt} \neq 0\right)$$

Github:
https://min7014.github.io/math20240407001.html

Click or paste URL into the URL search bar,
and you can see a picture moving.