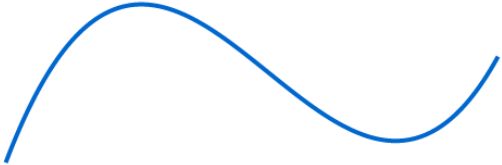
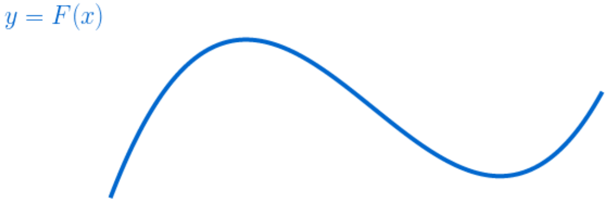
매개변수 함수의 미분
(Derivatives of parametric functions)

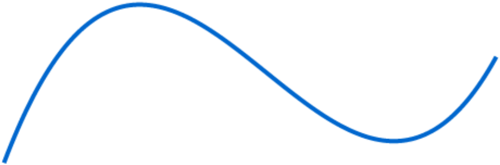



$y = F(x)$

Derivatives of parametric functions

$$y = F(x)$$

$$\begin{cases} x = f(t) \\ y = g(t) \end{cases}$$



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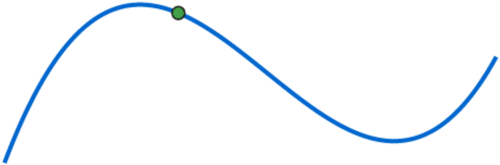
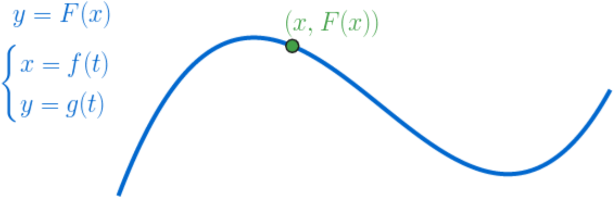


Derivatives of parametric functions



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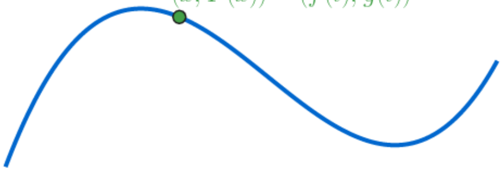
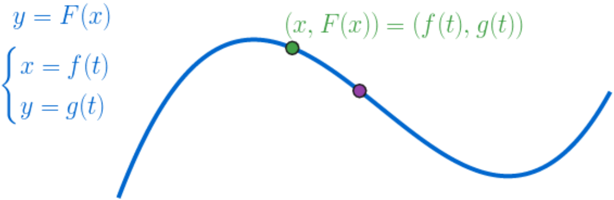


Derivatives of parametric functions



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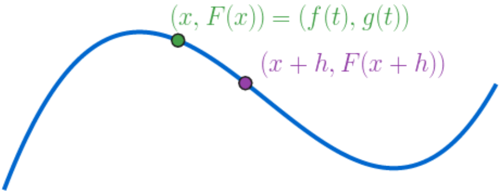

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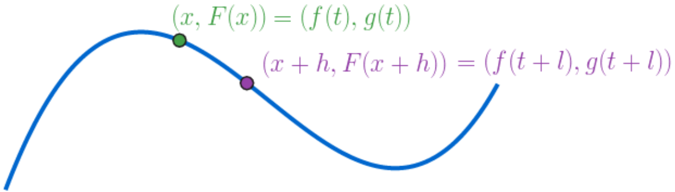

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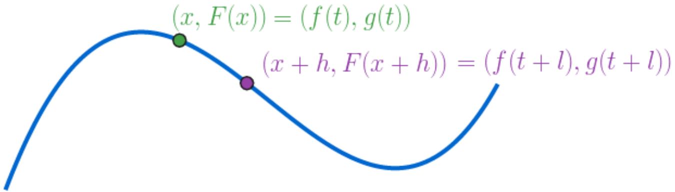

$$\frac{dy}{dx}$$

Derivatives of parametric functions

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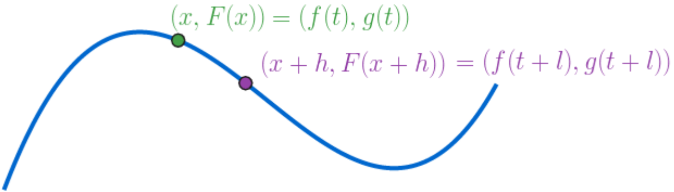

$$\frac{dy}{dx} = \lim_{h \to 0} \frac{F(x+h) - F(x)}{h}$$

Derivatives of parametric functions

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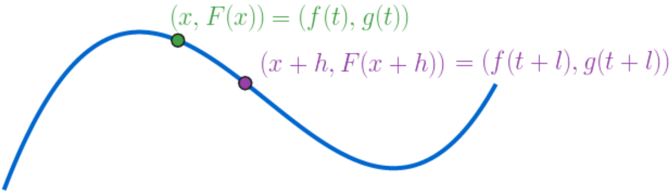

$$\frac{dy}{dx} = \lim_{h\to 0} \frac{F(x+h) - F(x)}{h} = \lim_{h\to 0} \frac{F(x+h) - F(x)}{x+h-x}$$

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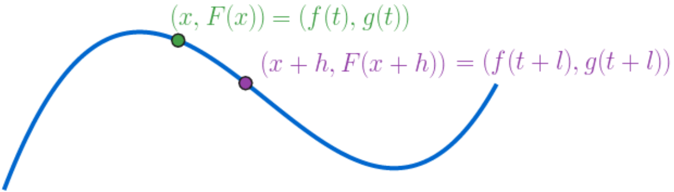

$$\frac{dy}{dx} = \lim_{h\to 0} \frac{F(x+h) - F(x)}{h} = \lim_{h\to 0} \frac{F(x+h) - F(x)}{x+h-x} = \lim_{l\to 0} \frac{g(t+l) - g(t)}{f(t+l) - f(t)}$$

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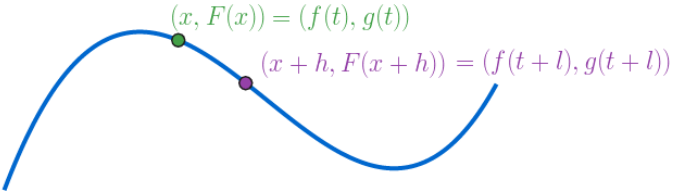

$$\frac{dy}{dx} = \lim_{h\to 0} \frac{F(x+h)-F(x)}{h} = \lim_{h\to 0} \frac{F(x+h)-F(x)}{x+h-x} = \lim_{l\to 0} \frac{g(t+l)-g(t)}{f(t+l)-f(t)}$$

$$= \lim_{l\to 0} \frac{\dfrac{g(t+l)-g(t)}{l}}{\dfrac{f(t+l)-f(t)}{l}}$$

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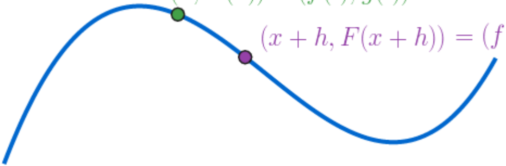

$$\frac{dy}{dx} = \lim_{h\to 0} \frac{F(x+h) - F(x)}{h} = \lim_{h\to 0} \frac{F(x+h) - F(x)}{x+h-x} = \lim_{l\to 0} \frac{g(t+l) - g(t)}{f(t+l) - f(t)}$$

$$= \lim_{l\to 0} \frac{\dfrac{g(t+l) - g(t)}{l}}{\dfrac{f(t+l) - f(t)}{l}} = \frac{g'(t)}{f'(t)}$$

Derivatives of parametric functions

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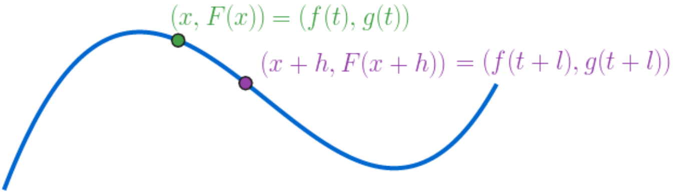

$$\frac{dy}{dx} = \lim_{h\to 0}\frac{F(x+h)-F(x)}{h} = \lim_{h\to 0}\frac{F(x+h)-F(x)}{x+h-x} = \lim_{l\to 0}\frac{g(t+l)-g(t)}{f(t+l)-f(t)}$$

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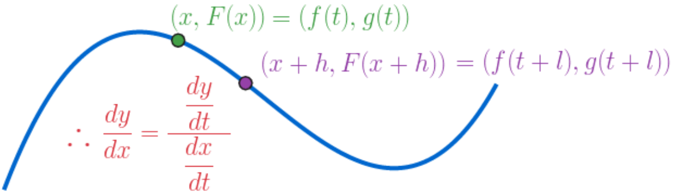

$$\frac{dy}{dx} = \lim_{h \to 0} \frac{F(x+h) - F(x)}{h} = \lim_{h \to 0} \frac{F(x+h) - F(x)}{x + h - x} = \lim_{l \to 0} \frac{g(t+l) - g(t)}{f(t+l) - f(t)}$$

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AlgeoMath: http://me2.do/5SsugsHe
YouTube: https://youtu.be/7I1SAFzZ6z4

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