



## 0221 Cálculo

## Ejercicios Calculo Diferencial - Derivadas (10 06, 2021)

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## 1. Halle las siguientes derivadas

$$\blacksquare y = x^2 \operatorname{sen}^4 x + x \cos^{-2} x$$

$$y' = \frac{d}{dx}(x^2 \operatorname{sen}^4 x) + \frac{d}{dx}(x \cos^{-2} x)$$

$$y' = 2x \operatorname{sen}^4 x + x^2 * 4 \operatorname{sen}(x)^3 \cos(x) + \cos(x)^{-2} + x(-2 \cos(x)^{-3} (-\operatorname{sen}(x)))$$

$$= 2x \operatorname{sen}^4 x + \frac{2x \operatorname{sen}(x)}{\cos^3(x)} + 4x^2 \operatorname{sen}^3 x \cos(x) + \frac{1}{\cos^2 x}$$

$$\blacksquare k(x) = x^2 \sec\left(\frac{1}{x}\right)$$

$$k'(x) = \frac{d}{dx}(x^2) * \sec\left(\frac{1}{x}\right) + x^2 * \frac{d}{dx} \sec\left(\frac{1}{x}\right)$$

$$k'(x) = 2x * \sec\left(\frac{1}{x}\right) + x^2 * \tan\left(\frac{1}{x}\right) \sec\left(\frac{1}{x}\right) * \left(-\frac{1}{x^2}\right)$$

$$k'(x) = \frac{2x}{\cos\left(\frac{1}{x}\right)} - \tan\left(\frac{1}{x}\right) \sec\left(\frac{1}{x}\right)$$

$$k'(x) = \frac{2x}{\cos\left(\frac{1}{x}\right)} - \frac{\operatorname{sen}\left(\frac{1}{x}\right)}{\cos\left(\frac{1}{x}\right)^2}$$

$$= \frac{2x \cos\left(\frac{1}{x}\right) - \operatorname{sen}\left(\frac{1}{x}\right)}{\cos\left(\frac{1}{x}\right)^2}$$

$$\blacksquare y = \tan^3 x$$

$$y' = \frac{d}{dx} \tan^3 x * \frac{d}{dx}(\tan x)$$

$$y' = 3 \tan(x)^2 \sec(x)^2$$

$$= \frac{3 \operatorname{sen}(x)^2}{\cos(x)^4}$$

## 2. Link al archivo en Overleaf

$$\blacksquare \text{https://www.overleaf.com/read/mrztbpssyjcv}$$

## Referencias

*Thomas George Brinton, Weir Maurice D., Hass Joel, Heil Christopher, Behn Antonio.* Thomas' Calculus: Early Transcendentals. 2010.

[Thomas et al. \(2010\)](#)