

Examen cálculo 09.12.2020

Alexis Acero

$$1.- y = \frac{2x^3}{3x+9} = \frac{2x^3}{3(x+3)} =$$

$$y' = \frac{d}{dx} \left( \frac{2x^3}{3x+9} \right) = y' = \frac{d}{dx} \left( \frac{2x^3}{3(x+3)} \right) = \frac{(2x^3)'}{3(x+3)}$$

$$y' = \frac{d/dx(2x^3)(x+3) - 2x^3 d/dx(x+3)}{(x+3)^2}$$

$$y' = \frac{2(x+3) - 2x(1)}{(x+3)^2} = \frac{2x+6-2x}{(x+3)^2} = \frac{6}{(x+3)^2}$$

$$y' = \frac{6}{(x+3)^2}$$

$$4.- y = \frac{x+2}{\tan x} = \frac{x+2}{\tan(x)} = \frac{d}{dx} \left( \frac{v}{v} \right)$$

$$y' = \frac{\tan(x) d/dx(x+2) - (x+2) d/dx(\tan(x))}{\tan^2(x)}$$

$$y' = \frac{\tan(x)(1) - (x+2)(\sec^2(x))}{\tan^2(x)}$$

$$y' = \frac{\tan(x)(1) - (x+2)(\sec^2(x))}{\tan^2(x)}$$

$$y' = \frac{\tan(x) - x \sec^2(x) - 2 \sec^2(x)}{\tan^2(x)}$$

$$y' = \frac{-x \sec^2(x) + \tan(x) - 2 \sec^2(x)}{\tan^2(x)}$$

Examen cálculo

09.12.2020

Alexis Acero

$$5.- y = \text{sen}(a - bx) \quad \frac{d}{du}(\sin(u)) \cdot \frac{d}{dx}(a - bx)$$

$$y' = \cos(u) \cdot \frac{d}{dx}(a - bx) = \cos(a - bx) \cdot \frac{d}{dx}(a - bx)$$

$$y' = \cos(a - bx) \left( \frac{d}{dx}(a) + \frac{d}{dx}(-bx) \right)$$

$$y' = \cos(a - bx) \left( 0 + \frac{d}{dx}(-bx) \right) = \cos(a - bx) \cdot \frac{d}{dx}(-bx)$$

$$y' = \cos(a - bx) \cdot (-b \cdot \frac{d}{dx}(x)) = \cos(a - bx) \cdot (-b(1))$$

$$y' = \cos(a - bx) \cdot (-b) = \boxed{y' = -b \cos(a - bx)}$$

$$6.- y = \sec \frac{2x^2}{2x+4} = \frac{\sec(4)}{2x+4} = \frac{d}{dx} \left( \frac{A}{f} \right) = \frac{A'f - Af'}{f^2}$$

$$y' = \frac{-\sec(4) \cdot \frac{d}{dx}(2x) + \frac{d}{dx}(4)}{(2x+4)^2} = \frac{\sec(4) \cdot 2}{(2x+4)^2}$$

$$\boxed{y' = \frac{-2\sec(4)}{(2x+4)^2}}$$



Examen cálculo  
Alexis Acero

09.12.2020

$$7.- y = (1+2x)^2 = 2+4x$$

$$y' = d/dx (2) + 4 d/dx (x)$$

$$y' = 4(1) = \boxed{y' = 4}$$

$$8.- y = \frac{2-x}{x-2}$$

$$y' = -\frac{(x-2)}{x-2} = \frac{-1}{1} = y' = d/dx (-1)$$

$$\boxed{y' = 0}$$