Biomatematicas

Plataforma educativa

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2º parcial

Segundo Semestre.

①

$$Y = \frac{2-y}{1+2x^2} - v$$

$$\frac{dy}{dx} = \frac{v\frac{du}{dx} - u\cdot\frac{dv}{dx}}{v^2} = \frac{(1+2x^2)(1) - 2-y(1+4x)}{(1+2x^2)^2}$$

$$\frac{1+2x^2-1+4x}{(1+2x^2)^2} = \underline{\frac{2x^2-4x}{(1+2x^2)^2}}$$

② $Y = U^6$

$$\frac{d}{du}x^n = n^{x\,n-1} \Big\} \; 6x^{6-1} = \underline{6x^5}$$

③ $Y = \ln(ax+b)$

$$\left.\begin{matrix} U = ax+b \\ U' = a \end{matrix}\right\} \frac{\frac{d}{dx}a}{ax+b} = \underline{\frac{a}{axb}}$$

derivada $\dfrac{\frac{d}{dx}U'}{U}$

④ $Y = \ln x^3$

$$\frac{\frac{d}{dx}\ln x \frac{d}{dx}x}{x} = \frac{\frac{d}{dx}x^3}{x^3} = \underline{\frac{3x^2}{x^3}} \rightarrow \underline{\frac{1}{x}}$$

Simplificacion

⑤ $y = 4x\sqrt[2]{x^2-1}$

- $u = 4(2x^{2-1}) = 8x$
- $v = \sqrt{x^2-1} \Rightarrow v = \frac{2x}{2\sqrt{x-1}}$

$$\frac{dy}{dx} \cdot \frac{du}{dx} = \frac{d}{du}(8x) \cdot \frac{d}{dx}\left(\frac{2x}{2\sqrt{x-1}}\right)$$

$$\frac{8x}{1} \cdot \frac{2x}{2\sqrt{x-1}} = \frac{16x^2}{2\sqrt{x-1}} = \frac{8x^2}{\sqrt{x-1}} \text{ - denom}$$

$$\frac{16x}{\sqrt{x-1}}$$

⑥ $y = \frac{a+y}{a+y} \; u =$

$u = (a+y)$

$u = 0 - 1 = -1$

$v = (a+y)$

$v = +1$

derivada

$$= \frac{(a+y)\frac{du}{dx}(-1) - (a-y)\frac{du}{dx}(+1)}{(a+y)^2}$$

$\rightarrow (a+y)(-1) = a-y$

$$= \frac{(a+y)(-1) - (a+y)(+1)}{a+y\,2}$$

$$\frac{dy}{dx} = \frac{v\frac{du}{dx} - u\frac{du}{dx}}{v^2}$$

$$= \frac{a+y-a+y}{(a+y)^2} = \frac{2y}{(a+y)^2}$$