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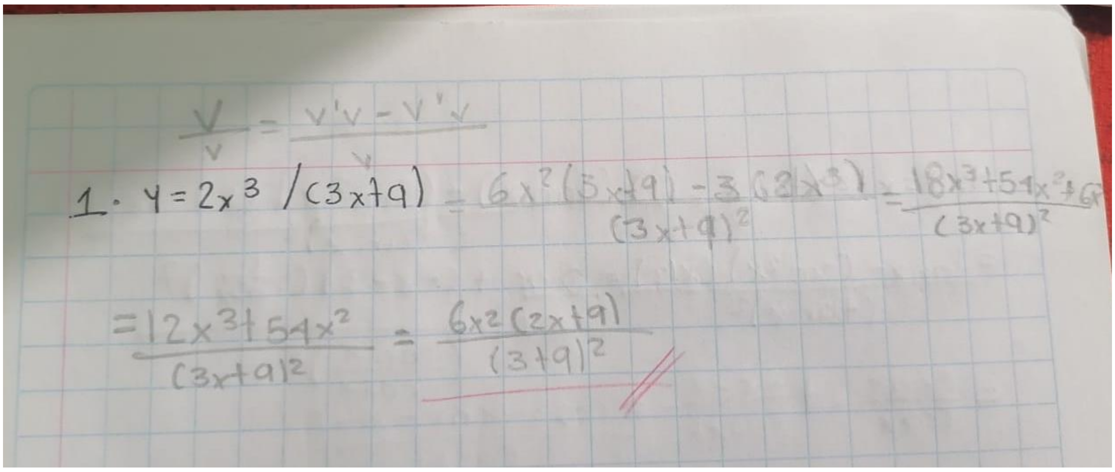
INSTRUCCIONES: Resuelve de forma clara y correcta las siguientes derivadas, aplicando las fórmulas correctas.

NOTA: LOS NÚMEROS DESPUÉS DE LAS VARIABLES SON EXPONENTES

1.- Y = 2X3 / (3X + 9)

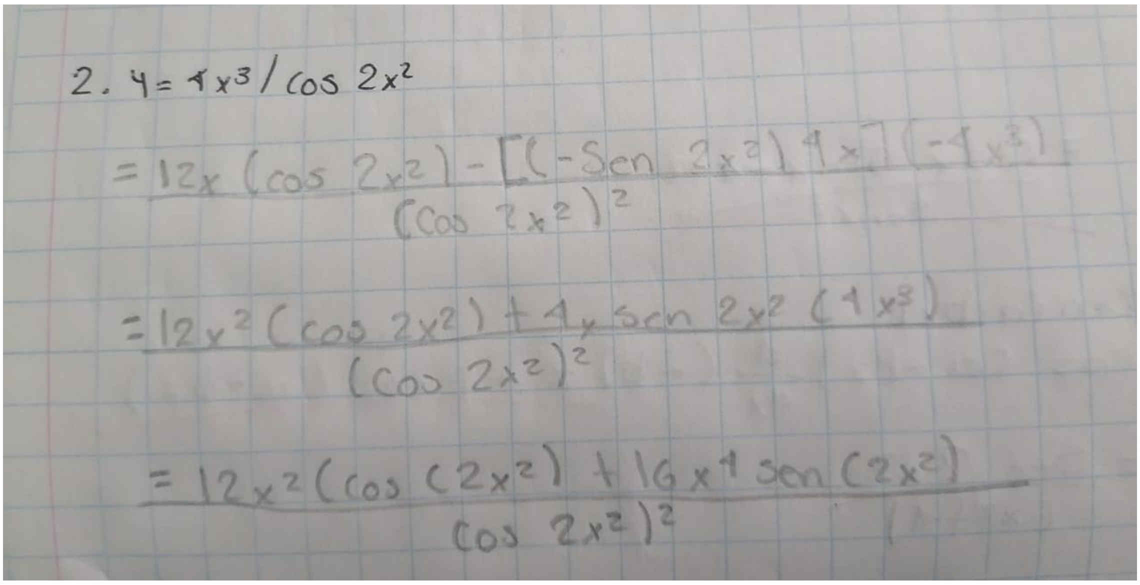


$$\frac{v}{v} = \frac{v'v - v'v}{v}$$

$$1.\ y = 2x^3 / (3x+9) = \frac{6x^2(3x+9) - 3(2x^3)}{(3x+9)^2} = \frac{18x^3+54x^2-6x^3}{(3x+9)^2}$$

$$= \frac{12x^3+54x^2}{(3x+9)^2} = \frac{6x^2(2x+9)}{(3+9)^2}$$

2.- Y = 4 X3 / cos 2x2



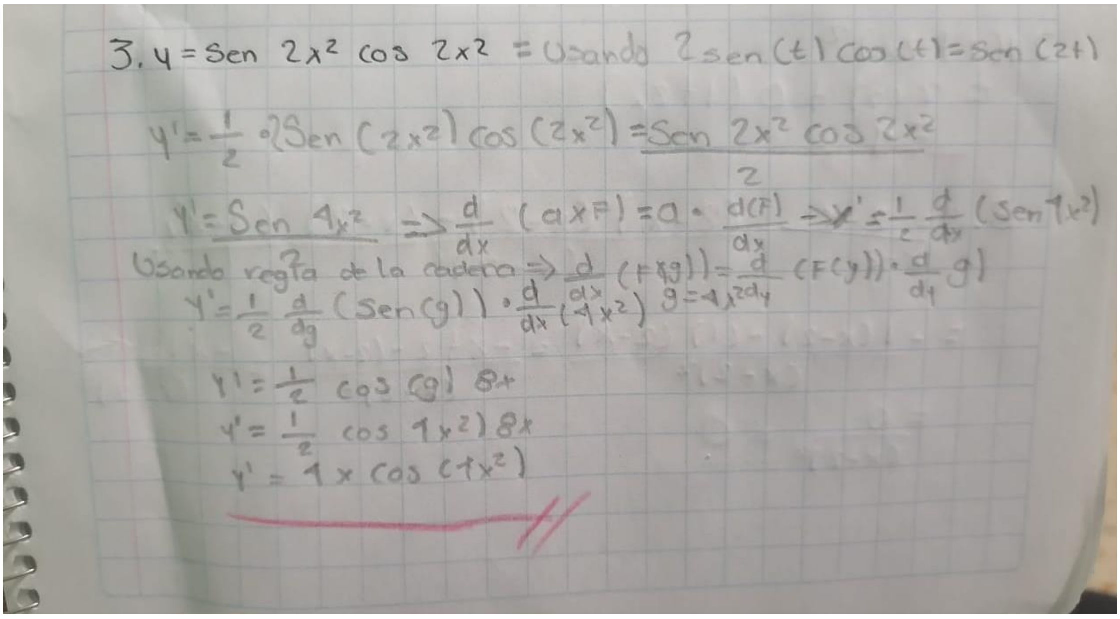
$$2.\ y = 4x^3 / \cos 2x^2$$

$$= \frac{12x(\cos 2x^2) - [(-\text{Sen } 2x^2)\,4x](-4x^3)}{(\cos 2x^2)^2}$$

$$= \frac{12x^2(\cos 2x^2) + 4x \text{ sen } 2x^2 (4x^3)}{(\cos 2x^2)^2}$$

$$= \frac{12x^2(\cos(2x^2)) + 16x^4 \text{ sen}(2x^2)}{(\cos 2x^2)^2}$$

3.- Y = sen 2x2 cos 2x2


3. $y = \text{Sen } 2x^2 \cos 2x^2$ = Usando $2 \text{sen}(t)\cos(t) = \text{Sen}(2t)$

$y' = \frac{1}{2} \cdot 2\text{Sen}(2x^2)\cos(2x^2) = \frac{\text{Sen } 2x^2 \cos 2x^2}{2}$

$y' = \frac{\text{Sen } 4x^2}{2} \Rightarrow \frac{d}{dx}(a \times F) = a \cdot \frac{d(F)}{dx} \Rightarrow y' = \frac{1}{2}\frac{d}{dx}(\text{Sen } 4x^2)$

Usando regla de la cadena $\Rightarrow \frac{d}{dx}(F(g)) = \frac{d}{dg}(F(g)) \cdot \frac{d}{dx} g$

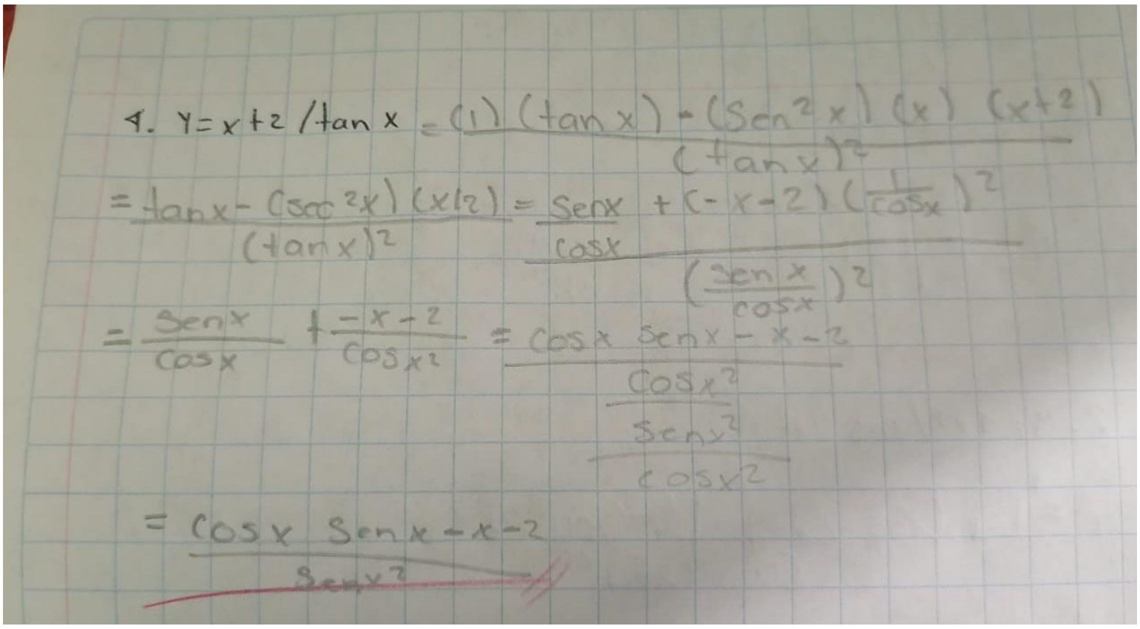
$y' = \frac{1}{2}\frac{d}{dg}(\text{Sen}(g)) \cdot \frac{d}{dx}(4x^2)$ $g = 4x^2$

$y' = \frac{1}{2}\cos(g)\, 8x$

$y' = \frac{1}{2}\cos 4x^2\, 8x$

$y' = 4x\cos(4x^2)$

4.- Y = X + 2 / tan x

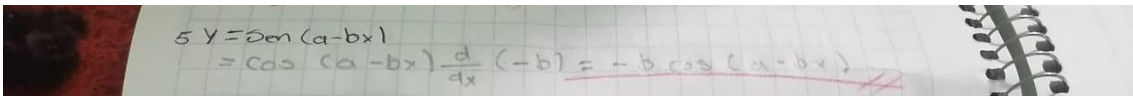

4. $Y = x+2/\tan x = \frac{(1)(\tan x) - (\sec^2 x)(x)(x+2)}{(\tan x)^2}$

$= \frac{\tan x - (\sec^2 x)(x+2)}{(\tan x)^2} = \frac{\frac{\text{Sen}x}{\cos x} + (-x-2)\left(\frac{1}{\cos x}\right)^2}{\left(\frac{\text{sen }x}{\cos x}\right)^2}$

$= \frac{\text{Sen}x}{\cos x} + \frac{-x-2}{\cos x^2} = \frac{\frac{\cos x \text{ Sen} x - x - 2}{\cos x^2}}{\frac{\text{Sen} x^2}{\cos x^2}}$

$= \frac{\cos x \text{ Sen } x - x - 2}{\text{Sen } x^2}$

5.- Y = sen (a – bx)


5 $Y = \text{Sen}(a-bx)$

$= \cos(a-bx)\frac{d}{dx}(-b) = -b\cos(a-bx)$

6.- Y = sec 2x2 / (X2 + 4)

7.- Y = (1 + 2X) 2

$7.Y (1 + 2x)^2$

$= 2(2) + 0(1+2x)$

$= 4$

8.- Y = 2 – X / X – 2