Problema 6 Calcular la derivada de las siguientes funciones

1. $y = (3x^2 - x + 1)^8$
2. $y = \sin(2x - 1) \cdot \ln(2x - 1)$
3. $y = e^{\cos 2x}$
4. $y = \ln\left(\dfrac{\cos x}{x^2 + 1}\right)$
5. $y = \dfrac{\sin(x^2 + 1)}{e^x}$
6. $y = \tan(x^2 + 1)$
7. $y = 7^{x \sin x}$
8. $y = \log_5\left(\dfrac{x^2 - 1}{x + 8}\right)$
9. $y = (x^2 + 2)^{x+1}$

Solución:

1. $y' = 8(3x^2 - x + 1)^7(6x - 1)$
2. $y' = 2\cos(2x - 1) \cdot \ln(2x - 1) + \sin(2x - 1) \cdot \dfrac{2}{2x - 1}$
3. $y' = -2\sin 2x e^{\cos 2x}$
4. $y' = \dfrac{-\sin x}{\cos x} - \dfrac{2x}{\cos x^2 + 1}$
5. $y' = \dfrac{2x\cos(x^2 + 1) \cdot e^x - \sin(x^2 + 1) \cdot e^x}{e^{2x}}$
6. $y' = \dfrac{2x}{\cos^2(x^2 + 1)}$
7. $y' = (\sin x + x\cos x)7^{x \sin x} \ln 7$
8. $y' = \dfrac{2x}{(x^2 - 1)\ln 5} - \dfrac{1}{(x + 8)\ln 5}$
9. $y' = (x^2 + 2)^{x+1}\left(\ln(x^2 + 2) + \dfrac{2x(x + 1)}{x^2 + 2}\right)$