8. $\underbrace{x^3 - 7xy - 4x + 3y^2}_{F} = \underbrace{0}_{\text{ZERO}}$

$$\frac{dy}{dx} = -\frac{F_x}{F_y}$$

$$= -\frac{3x^2 - 7y - 4}{-7x + 6y}$$

$x^3 - 7xy - 4x + 3y^2 = 0$

$P \quad Q$

$P' = -7 \quad Q' = 1 \cdot y'$

$P'Q + PQ'$

$3x^2 - 7y - 7xy' - 4 + 6yy' = 0$

$-7xy' + 6yy' = -3x^2 + 7y + 4$

$y'(-7x + 6y) = -3x^2 + 7y + 4$

$$y' = \frac{-3x^2 + 7y + 4}{-7x + 6y}$$

9. $\ln \sqrt[3]{3x^2 + y} - 7x = 0$

$\ln (3x^2 + y)^{\frac{1}{3}} - 7x = 0$

$\frac{1}{3} \ln (3x^2 + y) - 7x = 0$

$\underbrace{\ln(3x^2 + y) - 21x}_{F} = \underbrace{0}_{\text{ZERO}}$

$$\frac{dy}{dx} = -\frac{F_x}{F_y}$$

$$= -\frac{\frac{1}{3x^2+y} \cdot 6x - 21}{\frac{1}{3x^2+y} \cdot 1}$$

$$= -\frac{\frac{6x}{3x^2+y} - 21}{\frac{1}{3x^2+y}}$$

$$= -\frac{(3x^2+y)\left(\frac{6x}{3x^2+y}\right) - 21(3x^2+y)}{(3x^2+y)\left(\frac{1}{3x^2+y}\right)}$$

$= -[6x - 63x^2 - 21y]$

$= -6x + 63x^2 + 21y$