

* Derivative of a y -term requires $\frac{dy}{dx}$

** Terms with $x \cdot y$ require PRODUCT RULE

*** Problems with multiple y -variables will produce derivatives with multiple $\frac{dy}{dx}$

Steps:

- ① Take derivative implicitly
- ② Move all non- $\frac{dy}{dx}$ terms to one side of the equation and move all $\frac{dy}{dx}$ terms to other side
- ③ Factor out $\frac{dy}{dx}$ (GCF)
- ④ Divide by the resulting quantity

ex $x^2 y + 4x = 5y - 1$

① $x^2 \cdot \frac{dy}{dx} + y \cdot 2x + 4 = 5 \frac{dy}{dx}$

1st 2nd
1st - 2nd + 2nd - 1st

② $-x^2 \frac{dy}{dx} - x^2 \frac{dy}{dx}$

③ $2xy + 4 = 5 \frac{dy}{dx} - x^2 \frac{dy}{dx}$

④ $2xy + 4 = \frac{dy}{dx} (5 - x^2)$

$5 - x^2$

$\frac{2xy + 4}{5 - x^2} = \frac{dy}{dx}$