

Implicit Differentiation

Ex: $x^2 + y^2 = 25$

$$f'(x) = 2x + 2y \frac{dy}{dx} = 0$$

$$2y \frac{dy}{dx} = -2x$$

$$\frac{dy}{dx} = \frac{-2x}{2y}$$

$$\frac{dy}{dx} = -\frac{x}{y}$$

Ex: $2y = x^2 + \sin y$

$$2 \frac{dy}{dx} = 2x + \cos y \frac{dy}{dx}$$

$$2 \frac{dy}{dx} - \cos y \frac{dy}{dx} = 2x$$

$$\frac{dy}{dx} (2 - \cos y) = 2x$$

$$\frac{dy}{dx} = \frac{2x}{2 - \cos y}$$