


3.7 Implicit Differentiation Day 2

1. Differentiate both sides with respect to x .
2. Get all terms with dy/dx to one side of the equation.
3. Factor out dy/dx .
4. Solve for dy/dx

Ex 1) Find the slope of the tangent
to $y^2 - x^2 = 1$ at $(1, \sqrt{2})$

$$\text{Ex 2) } x^2 - xy + y^2 = 1$$

Find $\frac{dy}{dx}$

Find $\frac{d^2y}{dx^2}$  Do on next slide

$$\frac{dy}{dx} = y' =$$

Now find $\frac{d^2y}{dx^2} = y''$

Ex 3) $y^2 + 2x - 4y - 1 = 0$ Find the tangent and normal line at $(-2, 1)$.

Ex 4) $x \sin 2y = y \cos 2x$
Find the tangent and normal line at $(\pi/4, \pi/2)$

$$\text{Ex 5) } x^2 \cos^2 y - \sin y = 0$$

Find the tangent and normal line at $(0, \pi)$