3.7 Implicit Differentiation

Objectives:

- I can take the derivative by implicit differentiation

Consider $x^2 + y^2 = 9$

1. Find the equation of the tangent line through $(2, -\sqrt{5})$

Steps for implicit differentiation

I. Take the derivative with respect to x

II. Solve for $\frac{dy}{dx}$

For each of the following: A) find

B) Find the equation of the tangent and normal line at the given point

$y^2 = x$ (4, -2)

$x^2 - y^2 = 25$ (-5,0)

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Find $\frac{dy}{dx}$ $x^2 = \frac{x^2+1}{y^2}$

Find $\frac{dy}{dx}$ $y^2 = \frac{x^2-1}{x^3}$

Find $\frac{dy}{dx}$ $x^2+2xy+y^2=0$

Find $\frac{d^2y}{dx^2}$ $y^2 = x^2+2x$