Recall:

1. Determine the derivative of $y = x^2$

Implicitly Defined Functions:

ex: $x^3 + y^3 - 9xy = 0$

1. Find $\frac{dy}{dx}$ of the following:

   a. $y^2 = x$

   b. $x^3 + y^2 = 8xy$

c. $x = \sin y$

e. $\frac{x}{y} + \pi = x$

d. $x + \sin y = xy$

Challenge: Find $\frac{dy}{dx}$

f. $x^2 = \frac{x-y}{x+y}$

Steps for Implicit Differentiation:

1.

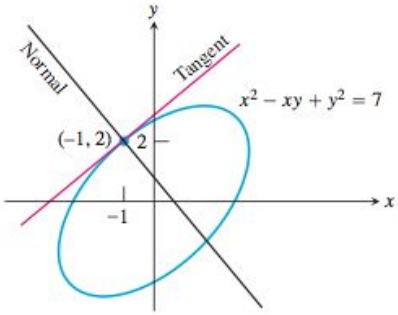
2.

3.

4.

2. Find the slope of the circle $x^2 + y^2 = 25$ at the point (3, -4)

3. Find the tangent and normal to the ellipse $x^2 - xy + y^2 = 7$ at the point (-1, 2)



Challenge Problems!

1. If $\frac{dy}{dx} = 1 + \sin y$, then $\frac{d^2y}{dx^2} =$

2. Find $\frac{d^2y}{dx^2}$ if $2x^3 - 3y^2 = 8$