In the past sections, we have looked at functions that describe one variable *explicitly* in terms of another. In this section we will learn how to find the derivative of a function that is implicitly defined – that is, without directly stating one variable’s relationship to the others. We will first examine what implicit differentiation is, then observe its application to several functions.

# Implicit Differentiation

Implicit Differentiation (method) – differentiating both sides of an equation for , then solving for (prime notation for ).

When implicitly differentiating an equation,

1. Put both sides of the equation in the form .
2. Apply differentiation rules like normal to both sides.

**Remember**, is a function of , so . (This uses the chain rule from section 2.5.)

1. Isolate on one side of the equation.
2. Now the equation is differentiated!

[See 2-6 Exercises]

# What did you learn?

* What is implicit differentiation?
* Why does differentiating an equation over make a derivative of ?
* How do you find the tangent line for a function by implicitly differentiation?