

Chapter 3.7: Implicit Differentiation

Calculus I

College of the Atlantic. Fall 2016

1. Implicitly differentiate the following functions:

- (a) $x^2 + y^2 = 16$.
- (b) $x^2 + xy + y + 17 = 0$.

2. Consider the “function” defined implicitly by the equation:

$$y^3 - xy = -6. \tag{1}$$

A graph of this “function” is shown in the figure.

- (a) Convince yourself that you do not want to solve for y .
- (b) Implicitly differentiate Eq. (1) and solve for y' .
- (c) Verify that the point $x = 7, y = 2$ satisfies Eq. (1).
- (d) Find the slope of the line tangent to the curve at $x = 7, y = 2$.

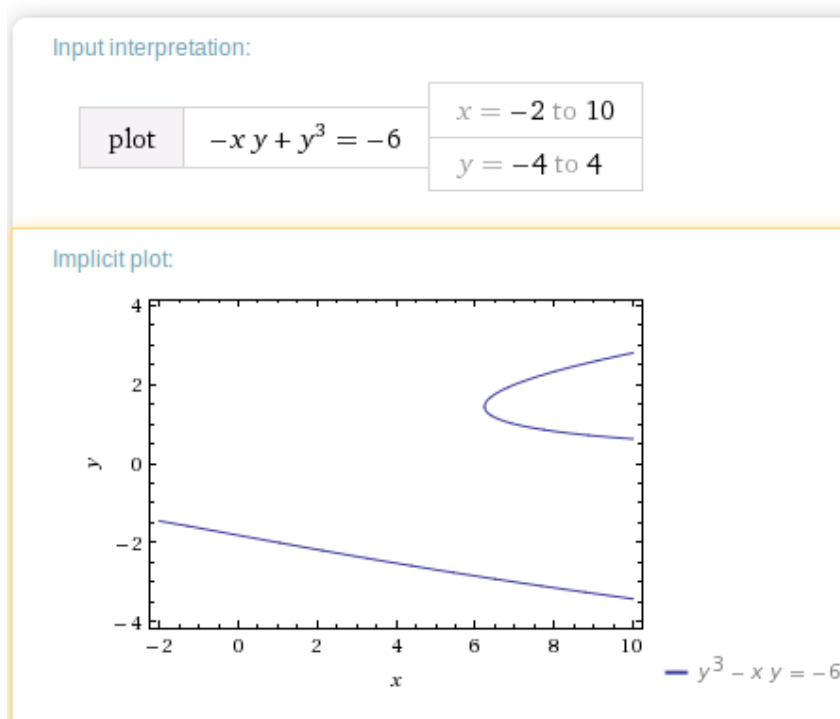


Figure 1: An implicit function.