

Implicit Differentiation (3.7)

Expected Skills.

At the end of this section, students will be able to:

- explain the interest of using implicitly defined functions,
- explain how to implicitly differentiate functions and when it applies,
- recognize when implicit differentiation applies and use it correctly to differentiate implicitly defined functions,
- use this process to compute the equations of tangent or normal lines to a given curve.

Pre-Class Activity (ch3-derivatives-5-implicit-1-pc). The goal of the pre-class activity is twofold. First, to provide motivation of why defining curves or functions implicitly is interesting. Second, to have the students understand the idea that when using implicitly defined function, y is actually a function of x and therefore the chain rule applies (i.e. the derivative of y is y').

Worksheet (ch3-derivatives-5-implicit-2-ws). In class, one should start making the connection with the pre-class activity by asking about the interest of defining functions implicitly. One can then move to computing derivatives. The class activities focus on having the students make such computations (computing derivatives and equations of tangent lines).