

Implicit Differentiation

1. Consider the circle $x^2 + y^2 = 9$. Write the equations of the tangent lines to the circle at $x = 1$.
2. Consider $3y = 3x^2 + \tan y$. Find $\frac{dy}{dx}$ using implicit differentiation.
3. Consider the curve $(3x - 2y - 13)(3x + 2y - 5) = 36$.
 - a. Find $\frac{dy}{dx}$.
 - b. Find the coordinates that yield a vertical tangent line.
[Hint: $\frac{dy}{dx}$ does not exist]