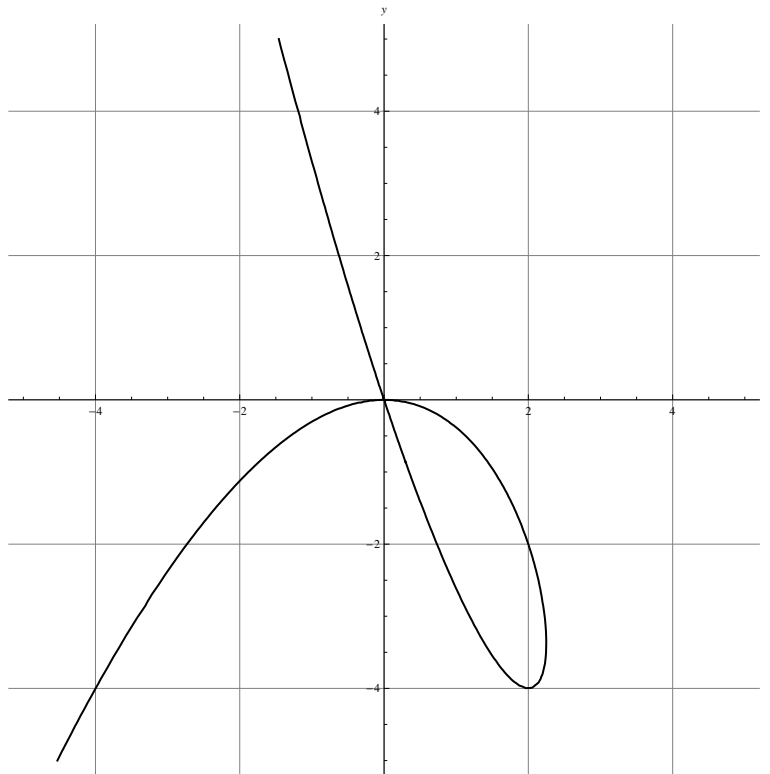


Implicit differentiation example

A plot for the implicit relation $x^3 + y^2 + 3xy = 0$ is shown below.



1. The curve has two points corresponding to $x = 2$. Use the plot to estimate the y coordinate for each of these points.
2. Substitute $x = 2$ into the relation $x^3 + y^2 + 3xy = 0$. Solve the resulting equation to find the exact values of the y coordinate for each of these points.
3. Draw an estimated tangent line at each of the two points corresponding to $x = 2$. Estimate the slope of each line you draw.
4. Use implicit differentiation to compute the derivative $\frac{dy}{dx}$.
5. Evaluate $\frac{dy}{dx}$ for each of the two points corresponding to $x = 2$. Compare these values with the slopes you estimated in 3.