

3.7 Implicit Functions

Name:

Date:

P 3. Let $x^2 + xy - y^3 = xy^2$. Find dy/dx .

P 13. Let $\ln x + \ln(y^2) = 3$. Find dy/dx .

P 17. Let $\arctan(x^2y) = xy^2$. Find dy/dx .

P 27. Find the equations of the tangent lines to the curve of $\ln(xy) = 2x$ at $(1, e^2)$.

P 29. Find the equations of the tangent lines to the curve of $y = \frac{x}{y+a}$ at $(0, 0)$.

P 33. Find the equations of the tangent lines at $x = 2$ to the ellipse

$$\frac{(x-2)^2}{16} + \frac{y^2}{4} = 1.$$

P 35.

- (a) If $x^3 + y^3 - xy^2 = 5$, find dy/dx .
- (b) Using your answer to part (a), make a table of approximate y -values of points on the curve near $x = 1$, $y = 2$. Include $x = 0.96, 0.98, 1, 1.02, 1.04$.
- (c) Find the y -value for $x = 0.96$ by substituting $x = 0.96$ in the original equation and solving for y using a computer or calculator. Compare with your answer in part (b).
- (d) Find all points where the tangent line is horizontal or vertical.

P 45. Give an example of a curve that has two horizontal tangents at the same x -values, but no vertical tangents.