

Section 3.7: Implicit Differentiation - Worksheet

1. Calculate $\frac{dy}{dx}$ for the following curves.

(a) $e^{5xy} + 11 \tan(x) = y^2$

(c) $\sqrt{x^2 + y^2} = 3^y$

(b) $x^3 - x \sin(y) = 3xy$

(d) $x^4 + 6xy^2 + 5y^3 = 0$

2. Consider the curve of equation $x^2 + 6xy - y^2 = 40$. Find the points on the curve, if any, where the tangent line is (a) horizontal, (b) vertical, (c) [**Advanced**] perpendicular to $y = 2x + 9$.