

Homework 5

1. Use implicit differentiation to find dy/dx if

(a) $x^3 + y^3 = x^2 + xy$,

(b) $e^{xy} + x = y$,

(c) $\sqrt{x^2 + xy} - \sin y = 0$,

(d) $\sqrt{x + y} + \sqrt{x - y} = 2$,

(e) $\frac{x^2 + 3xy^2}{x + y^3}$.

2. Find the equation of the line tangent to the curve

$$x^2 + x + y^3 = 14$$

at the point $(2, 2)$.

3. Find the second derivative of the function $y(x)$ defined implicitly by the equation

$$xy + x + y^3 = 25.$$