

1-2: Find dy/dx using implicit differentiation.

1. $x^3 - xy + y^2 = 4$

2. $\sin x + 2\cos 2y = 1$

3-4: Find the tangent line for each function at the indicated point.

3. $xy = 4$, $(-4, -1)$

4. $\tan(x + y) = x$, $(0, 0)$

5-6: Complete the following.

5. Find $\frac{d^2y}{dx^2}$ for $y^2 = 4x$

6. At what point(s) does the tangent line to the curve $y^2 = 2x^3$ have a slope of $m = -\frac{3}{4}$?

Answers:

1) $\frac{dy}{dx} = \frac{y - 3x^2}{-x + 2y}$

4) $y - 0 = 0(x - 0)$
 $y = 0$

2) $\frac{dy}{dx} = \frac{\cos x}{4 \sin(2y)}$

5) $\frac{d^2y}{dx^2} = \frac{-4}{y^3}$

3) $y + 1 = -\frac{1}{4}(x + 4)$

6) $\left(\frac{1}{8}, -\frac{1}{16}\right)$ & $(0, 0)$