

Section 2.5

1) Find the following:

a) $\frac{d}{dx}[2y^5]$

b) $\frac{d}{dx}[3y^2 - 4x^2]$

c) $\frac{d}{dx}[2x^2y^3]$

Guidelines for Implicit differentiation

1. Differentiate both sides of the equation *with respect to* x .
2. Collect all terms involving dy/dx on the left side of the equation and move all other terms to the right side of the equation.
3. Factor dy/dx out of the left side of the equation.
4. Solve for dy/dx .

2) Find $\frac{dy}{dx}$ given that $2y^4 - 3y^2 + x^2 - 5x = 6$.

3) Determine the slope of the tangent line to the graph of $3x^3 - 2y^3 = x$ at the point $(1, 1)$.

4) Determine the slope of the graph of $(x + y^3)^2 = 4x^2y$ at the point $(1, 1)$.

5) Find $\frac{dy}{dx}$ for the equation $\cos y = x$. Write $\frac{dy}{dx}$ explicitly as a function of x .

6) Find $\frac{d^2y}{dx^2}$ given that $x^3 - y^3 = 8$

7) Find the tangent line to the graph given by $x^3 + 2xy^2 - y^3 = 11$ at the point $(2, 1)$.

Homework for this section: Read the section and watch the videos/tutorials. Then do these problems in preparation for the quiz: #7, 8, 17, 29, 35, 45