Section 2.5

1) Find the following:

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

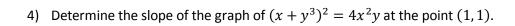
b)
$$\frac{d}{dx}[3y^2 - 4x^2]$$

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).



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).