Math 453 - Quinn Name_____

Implicit Differentiation HW 4

Date_____

For each problem, use implicit differentiation to find $\frac{dy}{dx}$ in terms of x and y.

1) $-5y^3 + 5 = 2x$

2) $3x^2 = -2y^2 + 4$

3) $2x - 3x^3y^2 = 1$

4) $3 = x + 3x^2y^3$

5) $-4x^3y + 1 = 2x^3$

6) $-4x^2y^3 + 2 = 4x^2$

For each problem, use implicit differentiation to find $\frac{d^2y}{dx^2}$ in terms of *x* and *y*.

7) $4x + 5y^2 = 2$

8) $3 = x + 3y^2$

Answers to Implicit Differentiation HW 4

1) $\frac{dy}{dx} = -\frac{2}{15y^2}$

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

3) $\frac{dy}{dx} = \frac{2 - 9x^2y^2}{6x^3y}$

4) $\frac{dy}{dx} = \frac{-1 - 6xy^3}{9x^2y^2}$

5) $\frac{dy}{dx} = \frac{-3 - 6y}{2x}$

6) $\frac{dy}{dx} = \frac{-2 - 2y^3}{3xy^2}$

7) $\frac{d^2y}{dx^2} = -\frac{4}{25y^3}$

8) $\frac{d^2y}{dx^2} = -\frac{1}{36y^3}$