

Name: \_\_\_\_\_

## Implicit Differentiation

**Exercise 1:** Find  $\frac{dy}{dx}$  by implicit differentiation:

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

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

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

4)  $-3xy - 4y^2 = 2$

5)  $\frac{3}{2x} + \frac{1}{y} = y$

6)  $x = \tan y$

7)  $y = \cos(x - y)$

8)  $x = \sec^3(y^2 - 1)$

9)  $x \sin y + y \sin x = 1$

10)  $\sin xy = x$

11)  $\frac{4}{x} - \frac{3}{y} = 2x$

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

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

14)  $x + 3x^2 + 4y^3 + 3xy = 1$