Name: _____

Implicit Differentiation

1) Find $\frac{dy}{dx}$ by using implicit differentiation.

1) $y^2 + \ln\left(\frac{x}{y}\right) - 4x = -3$

2) $e^{xy} + x^2 - y^2 = 0$

2) Use implicit differentiation to find $\frac{dy}{dx}$.

(1) $x^3 + y^3 = 18xy$

(2) $y^2 = (x - y)(x^2 + y)$

(3) $x + \tan(xy) = 0$

(4) $x^2 + 3xy + y^3 = 10$

(5) $y^2 = (x - y)(x^2 + y)$

(6) cos(x+y)=x

3) Find $\frac{dy}{dx}$ for the implicit equation:

1) $x^2 - 6x + y^2 - 4y = 12$

2) $x^2 y^2 = 25$

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

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

4) 1) Find $\frac{dy}{dx}$ for the circle whose equation is: $x^2 + 16x + y^2 - 4y = 101$

2) Use this result to find the gradient of the tangents to this circle at the four points with coordinates (4, −3), (−3, 14), (−8, −11) and (−21, 2).