Name _____

Homework 20
section 3.7

1. (3) Find $\frac{dy}{dx}$ if $y = x^2 \sin y$.

2. (4) Find the equation of the tangent line to $\ln(xy) = 2x$ at $(1, e^2)$.

3. (4) Find an equation of a line through the point $(-2, 3)$ that is tangent to the ellipse $5x^2 + 4y^2 = 56$.

**Solutions to the following should be written in a clear, logical order and should include some explanation.**

4. (9) Find the equations of the tangent lines to the circle $x^2 + y^2 = 25$ at the points where $x = 4$. Find the equations of the normal lines to the circle at these points (recall the normal line is perpendicular to the tangent line, and goes through the point). At what point do the two normal lines intersect?