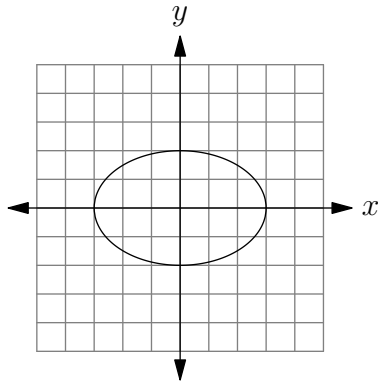NAME:

1. (10 points) (a) The ellipse in the graph is given by the equation

$$4x^2 + 9y^2 = 36.$$

Use implicit differentiation to find a formula for the derivative $\dfrac{dy}{dx}$.

(b) Find the equation of the tangent line passing through the point $(1, -1.89)$.

2. (5 points) Find the derivative of $y = \ln x$.

3. (5 points) Find the derivative of $y = 2^{-x^2}$.