

2. [6 points] Given the implicit curve  $y^2 = \cos(xy) - 3x$ , find  $\frac{dy}{dx}$ .

3. [9 points] This problem concerns the function  $f(x) = -x - 3e^{4x}$ .

a. [3 points] Show that the function  $f$  is invertible.

b. [2 points] Find  $f^{-1}(-3)$ . You do not need to show any work.

c. [4 points] Evaluate  $(f^{-1})'(-3)$ . Show all of your work.