

5. [12 points] Suppose a curve in the plane is given by the equation

$$\sin(\pi xy) = y - 1.$$

a. [3 points] Verify that the point  $(x, y) = (1, 1)$  is on the curve.

b. [5 points] Calculate  $\frac{dy}{dx}$ .

c. [4 points] Find the equation for the tangent line to the curve at the point  $(1, 1)$ .