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 \((1, 1)\).