

3. [12 points] The following questions relate to the implicit function

$$y^2 + 4x = 4xy^2.$$

a. [4 points] Compute  $\frac{dy}{dx}$ .

b. [4 points] Find the equation for the tangent line to this curve at the point  $(\frac{1}{3}, 2)$ .

c. [4 points] Find the  $x$ - and  $y$ -coordinates of all points at which the tangent line to this curve is vertical.