

$$x^2 + xy + y^2 = 3 \Rightarrow 2x + x y' + y \cdot 1 + 2y y' = 0$$

$$\Rightarrow x y' + 2y y' = -2x - y \Rightarrow y'(x + 2y) = -2x - y$$

$$\Rightarrow y' = \frac{-2x - y}{x + 2y}. \text{ When } x = 1 \text{ and } y = 1, \text{ we have}$$

$$y' = \frac{-2 - 1}{1 + 2 \cdot 1} = \frac{-3}{3} = -1, \text{ so an equation of the tangent line is}$$

$$y - 1 = -1(x - 1) \text{ or } y = -x + 2.$$