Consider the equation $x^2 + xy + y^2 = 1$, graphed below.

(a) Find the equation for $\frac{dy}{dx}$ in terms of $x$ and $y$.

(b) Find all points $(a, b)$ on the curve where the tangent line is parallel to the line $y = -x$.

(c) Find all points $(c, d)$ on the curve where the normal line (NOT the tangent!) is horizontal.
Problem 2 Consider the curve defined by \( xy^2 + 4y - 10 = 2x \)

(a) Find the slope of this curve at the point \((1, 2)\).

(b) Find the equation of the normal to the curve at the point \((1, 2)\).

Problem 3 Calculate \( dy/dx \) if

(a) \( x \cos(y) = y \cos(x) \)

(b) \( e^x = \cos(x - y) \)

(c) \( y = \sin(xy) \)