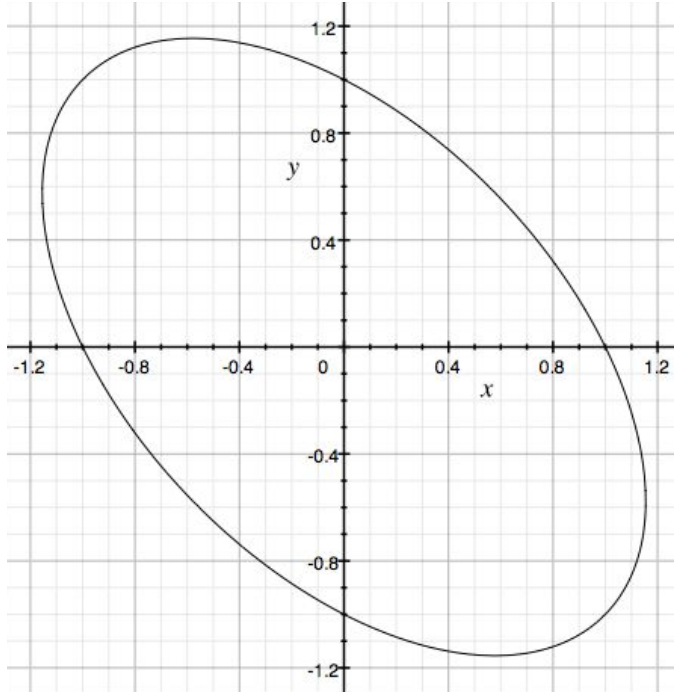


## Math 1110: In-Class Problems for 3.7

### Problem 1

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.

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**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)  $y = \sin(xy)$