LAST NAME: FIRST NAME:

MATH 009C - Summer 2018

Worksheet 2: July 3, 2018

1. Find an equation of the tangent line at the given point in two ways:
(a) without eliminating the parameter (use the parametric equation formula)
(b) by eliminating the parameter, and then taking the derivative.

$$x = \tan(t) \qquad y = \sec(t) \qquad \text{at the point } (1, \sqrt{2})$$

Can you identify the graph?

Please, show all work.

2. Use parametric equations to show that the area of an ellipse is $A = \pi ab$.

$$x = a\sin(t) \qquad y = b\cos(t) \qquad \text{for } 0 \leq t \leq 2\pi$$

where a and b are constants.

Please, show all work.

3. Find the arc length of the parametric curve

$$x = t^2 \qquad y = t^3$$

between the points (1,1) and (4,8).

Please, show all work.