

Quiz 3

Math 253

Name:

Show *all* your work (algebraically or geometrically) for each and simplify. No credit is given without supporting work.

1. [4] Find an *equation of the line* that is tangent at $(1, 1)$ to the parametric curve described by $x(t) = e^t$ and $y(t) = (t - 1)^2$.

2. Let $x(\theta) = \cos \theta$ and $y(\theta) = \sin \theta$.

(a) [1] Describe or graph the curve that the above parametric equations describe for $0 \leq \theta \leq 2\pi$.

(b) [2] Use the techniques *from* §10.2 to compute the length of the curve described by the above parametric equations for $0 \leq \theta \leq 2\pi$.

(c) [1] Describe or graph the curve that the above parametric equations describe for $0 \leq \theta \leq 4\pi$.

(d) [2] Use *any* techniques you like to compute the length of the curve described by the above parametric equations for $0 \leq \theta \leq 4\pi$.