

MATH 201.4 (082)

Quiz 1- Chapters 10.1-2

Duration: 15mn

Name:

ID number:

1.) (5pts) Sketch the curve defined by the parametric equations

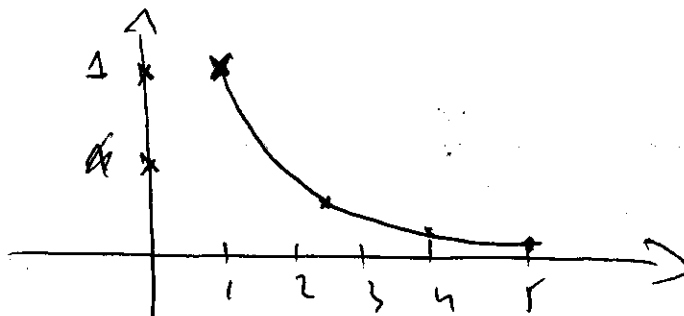
$$\begin{cases} x = e^t \\ y = e^{-t}, \quad t \in [0, 5] \end{cases}$$

2.) (2pts) Eliminate the parameter to find a Cartesian equation of the curve.

3.) (3pts) Set up, but do not evaluate, an integral that represents the length of the curve.

1)

t	0	1	2	3	4	5
x	1	2.7 e	4			
y	1	0.5	0.25			



2)

$$x \geq 0 \text{ and } y \geq 0 \quad x \cdot y = 1$$

$$\boxed{y = \frac{1}{x}, \quad x \in [1, e^5]}$$

3)

$$L = \int_0^5 \sqrt{\left(\frac{dx}{dt}\right)^2 + \left(\frac{dy}{dt}\right)^2} dt, \quad \frac{dx}{dt} = e^t, \quad \frac{dy}{dt} = -e^{-t}$$

So that $L = \int_0^5 \sqrt{e^{2t} + e^{-2t}} dt = \int_0^5 e^{-t} \sqrt{e^{4t} + 1} dt$