MATH 201.5 (082)

Quiz 1- Chapters 10.1-2 **Duration: 15mn**

Name: **ID number:**

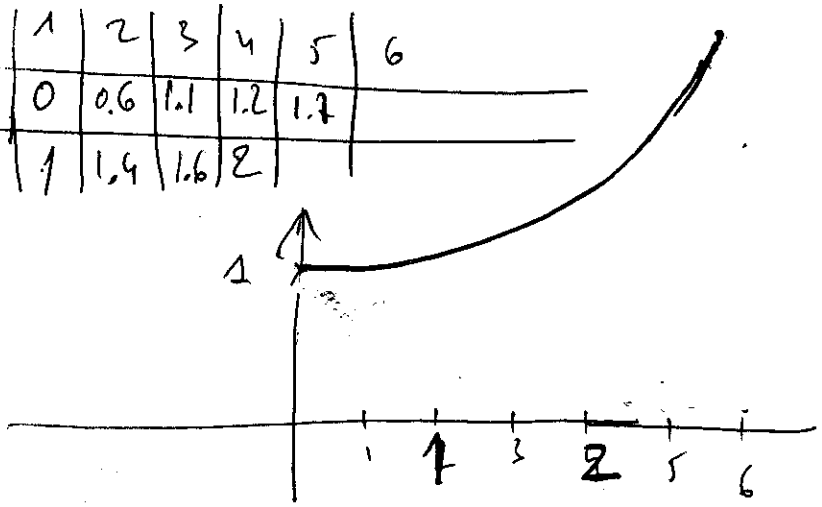
1.)(5pts) Sketch the curve defined by the parametric equations.

$$\begin{cases} x = \ln t \\ y = \sqrt{t}, \qquad t \in [1, 6] \end{cases}$$

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	1	2	3	4	5	6
x	0	0.6	1.1	1.2	1.7	
y	1	1.4	1.6	2		



2)

$x \geq 0$ and $y \geq 0$

$t = e^x \Rightarrow \boxed{y = \sqrt{e^x} = e^{x/2}, \quad x \in [0, \ln 6]}$

3)

$$L = \int_1^6 \sqrt{\left(\frac{dx}{dt}\right)^2 + \left(\frac{dy}{dt}\right)^2}\, dt, \quad \frac{dx}{dt} = \frac{1}{t}, \quad \frac{dy}{dt} = \frac{1}{2\sqrt{t}}$$

So that $L = \int_1^6 \sqrt{\frac{1}{t^2} + \frac{1}{4t}}\, dt = \int_1^6 \frac{1}{2t}\sqrt{4+t}\, dt$