Матн 205	Analytic Geometry	Quiz 7	27.12.2004
Name		Student No.	E-mail

You will not get any points if your answer is wrong, that is no points to your explanations if your answer is wrong. And of course no points to a correct answer if your explanation or proof is not correct or clear.

YOU must write GOOD Mathematics

1. Consider the formulas for the length L of a parametric curve (x(t), y(t)) and surface area A of the parametric curve (x(t), y(t)) generated by revolving about the x-axis on  $t \in [a, b]$ ,

$$L = \int_{a}^{b} \sqrt{\left(\frac{dx}{dt}\right)^{2} + \left(\frac{dy}{dt}\right)^{2}} dt, \qquad a \leqslant t \leqslant b$$
$$A = \int_{a}^{b} 2\pi y(t) \sqrt{\left(\frac{dx}{dt}\right)^{2} + \left(\frac{dy}{dt}\right)^{2}} dt, \qquad a \leqslant t \leqslant b$$

Deduce the associated formulas for a function in the form  $y = f(t), t \in [a, b]$ .

2. Find the length of the parametric curve

$$x = e^t \cos t, \quad y = e^t \sin t, \quad 0 \le t \le 2.$$