Consider the parametric equation

$$\begin{cases} x(t) = e^t \cos(t) \\ y(t) = e^t \sin(t) \end{cases} , \quad 0 \leq t \leq \pi.$$

Problem 1. Sketch a graph of the curve.

Problem 2. Find the slope of the tangent line to the curve at $t = \pi/2$.

Problem 3. Find the exact length of the curve.