A quadrant rod has a total charge of \( Q \) with a linear charge density \( \lambda = \lambda_0 \sin \theta \) (\( \lambda_0 \) positive constant). The rod is in the xy plane shown in figure.

a) Determine \( \lambda_0 \) constant in terms of \( Q \) and \( R \).

b) What is the electric field at \( O \) point in terms of units and \( \lambda_0, \pi, \varepsilon_0, R \)?