Consider an infinitely long cylinder of charge of radius R. The linear charge density is λ_0 , but the charge is distributed within the cylinder according to the relationship

$$\rho(r) = \frac{3\lambda_o}{5R^2} \left(1 + \frac{2r}{R}\right) \; . \label{eq:rho}$$

- A) Find the electric field for 0 < r < R.
- B) Find the electric field for r > R.
- C) Do the answers match at r = R?

You do NOT need to use Gauss's law from scratch. Make use of the relationship we developed in class.

1-9)