

47. We use

$$E(r) = \frac{q_{\text{encl}}}{4\pi\epsilon_0 r^2} = \frac{1}{4\pi\epsilon_0 r^2} \int_0^r \rho(r) 4\pi r^2 dr$$

to solve for  $\rho(r)$  :

$$\rho(r) = \frac{\epsilon_0}{r^2} \frac{d}{dr} [r^2 E(r)] = \frac{\epsilon_0}{r^2} \frac{d}{dr} (Kr^6) = 6K\epsilon_0 r^3 .$$