Problem 1) Let there be a spherically symmetric charge distribution with charge density varying as $\rho(r) = \rho_0(\frac{5}{4} - \frac{r}{R})$ upto r = R, and (r) = 0 for r > R, where r is the distance from the origin. The electric field at a distance r (r < R) from the origin is given by

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1) $\frac{4\pi\rho_0 r}{3\,\varepsilon_0}(\frac{5}{3} - \frac{r}{R})$

2) $\frac{\rho_0 r}{4\varepsilon_0}(\frac{5}{3} - \frac{r}{R})$

3) $\frac{4\rho_0 r}{3\,\varepsilon_0}(\frac{5}{4} - \frac{r}{R})$

4) $\frac{\rho_0 r}{3\,\varepsilon_0}(\frac{5}{4} - \frac{r}{R})$

Ans) 2