

Problem 2-15

(1) $r < a$:

$$q_{\text{enc}} = 0 \Rightarrow \vec{E}_{r < a} = \vec{0}$$

(2) $a < r < b$

$$q_{\text{enc}} = 4\pi C \int_{r=a}^{r=r} dr = 4\pi C(r-a) \Rightarrow \vec{E}_{a < r < b} = \frac{C(r-a)}{\epsilon_0 r^2} \hat{r}$$

(3) $r > b$

$$q_{\text{enc}} = 4\pi C \int_{r=a}^{r=b} dr = 4\pi C(b-a) \Rightarrow \vec{E}_{a < r < b} = \frac{C(b-a)}{\epsilon_0 r^2} \hat{r}$$