

Name

Quiz 7
PH361

$$\vec{p} = \int \vec{r}' \rho(r') dr'$$

$$\vec{F} = (\vec{p} \cdot \nabla) \vec{E}$$

$$E = \frac{1}{4\pi\epsilon_0} \frac{1}{r^3} (3\vec{p} \cdot \hat{r} \hat{r} - \vec{p})$$

$$\nabla t = \frac{\partial t}{\partial r} \hat{r} + \frac{1}{r} \frac{\partial t}{\partial \theta} \hat{\theta} + \frac{1}{r \sin \theta} \frac{\partial t}{\partial \phi} \hat{\phi}$$

$$\hat{r} = \sin \theta \cos \phi \hat{x} + \sin \theta \sin \phi \hat{y} + \cos \theta \hat{z}$$

$$\hat{\theta} = \cos \theta \cos \phi \hat{x} + \cos \theta \sin \phi \hat{y} - \sin \theta \hat{z}$$

$$\hat{\phi} = -\sin \phi \hat{x} + \cos \phi \hat{y}$$

$$\vec{D} = \epsilon_0 \vec{E} + \vec{P}$$

$$\vec{D} = \epsilon \vec{E}$$

1. For the bar electret make three careful sketches: one of \vec{P} , one of \vec{E} and one of \vec{D} . Assume the length, L , is about twice the radius.

