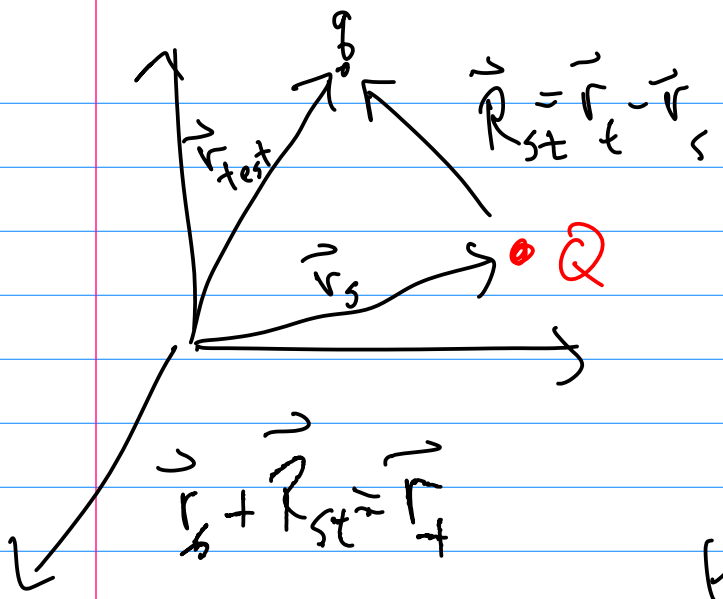
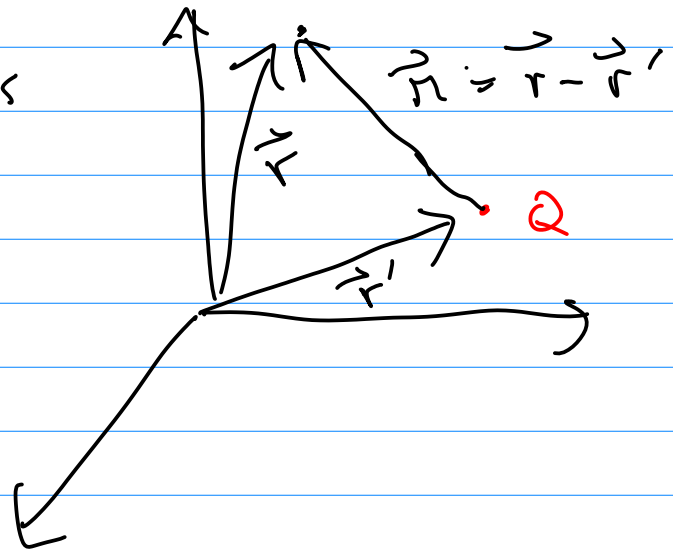
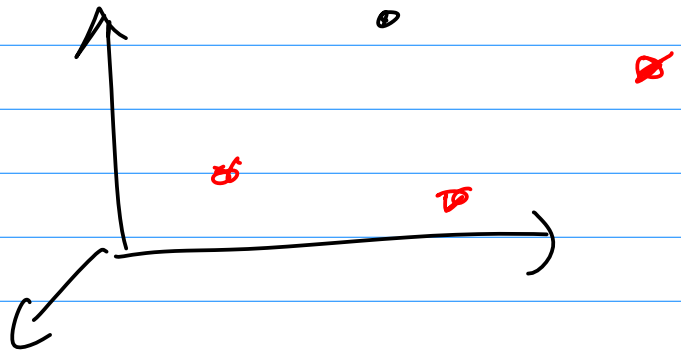
Ph361

$$\vec{F} = \frac{1}{4\pi\epsilon_0} \frac{Qq}{r^2} \hat{r}$$



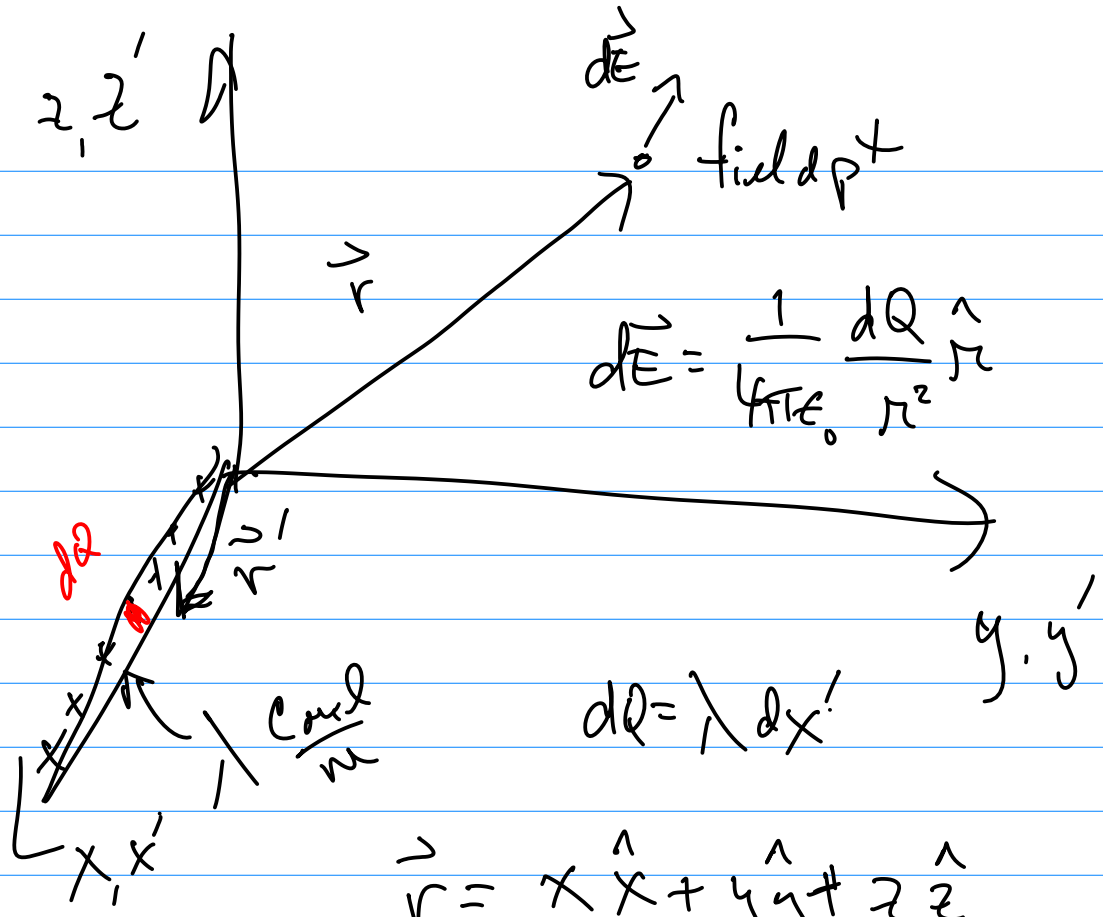




$$\vec{F} = \frac{1}{4\pi\epsilon_0}\frac{qQ}{R_{st}^2}\hat{R}_{st} = \frac{1}{4\pi\epsilon_0}\frac{qQ}{\pi^2}\hat{\pi}$$

$$\vec{F} = \sum_i \frac{1}{4\pi\epsilon}\frac{qQ_i}{R_{it}^2}\hat{R}_{it} \longrightarrow q\int \frac{dQ}{R^2}\hat{R}\,\frac{1}{4\pi\epsilon_0}$$

$\hat{\pi}$ points to π^2; the whole integral $= \vec{E}$



$$d\vec{E} = \frac{1}{4\pi\epsilon_0}\frac{dQ}{r^2}\hat{r}$$

$$dQ = \lambda\, dx'$$

$$\vec{r} = x\hat{x} + y\hat{y} + z\hat{z}$$

$$\vec{r}' = x'\hat{x} + 0\hat{y} + 0\hat{z}$$

$$\hat{r} = \frac{\vec{R}}{|\vec{R}|} = \frac{\vec{r} - \vec{r}'}{|\vec{r} - \vec{r}'|}$$