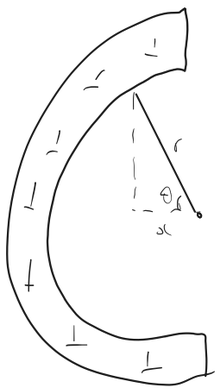
$$Q_1 = \boxed{\frac{\pi \cdot 8.99 \cdot 4.3}{0.098^2}}$$

$$Q_2 = \boxed{\frac{8.99 \cdot 8.3}{\pi \cdot 0.888^2} + \frac{8.99 \cdot 8.3}{0.024\sqrt{0.024^2 + \frac{1.776^2}{4}}}}$$



$q = 4.3 \times 10^{-9}\ C$

$L = 0.098\ m$

$\pi r = L \rightarrow r = \frac{L}{\pi}$

$\lambda = \frac{q}{L} = \frac{dq}{dL} \rightarrow dq = \lambda dL$

$$dE_x = k\int \frac{dq}{r^2}\cos\theta$$

$$dE_x = k\int \frac{\lambda dx}{r^2}\frac{x}{r}$$

$$dE_x = \frac{k\lambda}{r^3}\int x\,dx$$

$$dE_x = \frac{2k\lambda}{r^3}\int_0^r x\,dx$$

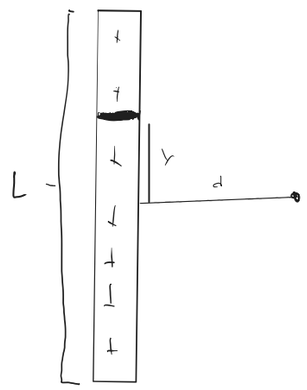
$$dE_x = \frac{2k\lambda}{r^3}\left|\frac{x^2}{2}\right|_0^r$$

$$dE_x = \frac{k\lambda}{r}$$

$$dE_x = \frac{k\lambda}{\frac{L}{\pi}}$$

$$dE_x = \frac{k\pi\lambda}{L}$$

$$dE_x = \frac{k\pi q}{L^2}$$



$dq = \lambda dL$

$= \lambda dy$

$$dE_x = k\int \frac{\lambda dy}{d^2+y^2}\cos\theta$$

$$dE_x = k\lambda\int \frac{dy}{d^2+y^2}\frac{d}{\sqrt{d^2+y^2}}$$

$$dE_x = dk\lambda\int \frac{1}{(d^2+y^2)^{3/2}}dy$$

$$E_x = \frac{kq}{d\sqrt{d^2+\frac{L^2}{4}}}$$ ↙ in the lecture

scm: $q = -8.3\ nC$

$r = 88.8\ cm$

rod $q = 8.3\ nC$

$L = 2R$

$d = 2.4\ cm$