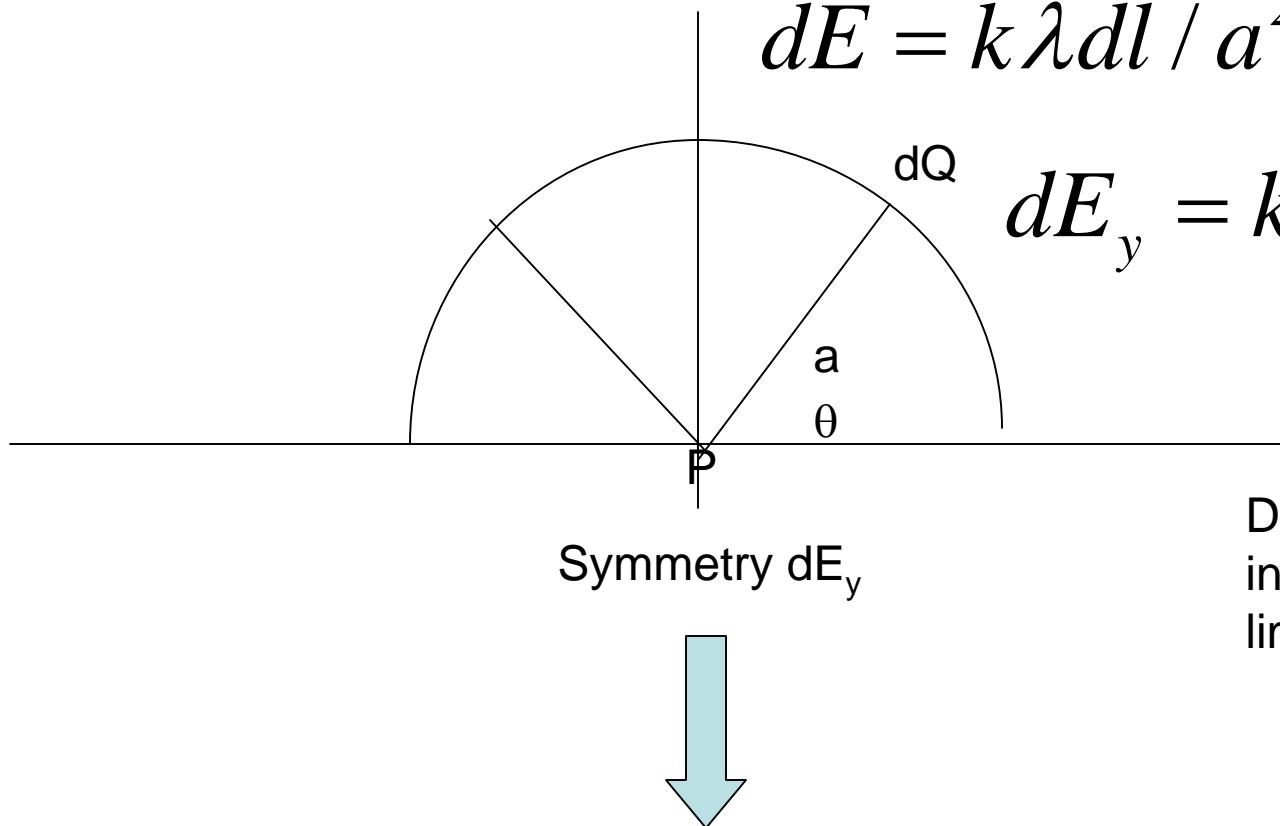


# Hints for 21.96

$$\lambda = Q / \pi a$$

$$dE = k\lambda dl / a^2 = k\lambda d\theta / a$$



$$dE_y = k\lambda \sin \theta d\theta / a$$

Do the integral and  
insert the correct  
limits of integration

# Hints for 22.58

- A sphere has a non-uniform charge density  $\rho(r) = \rho_0(1 - 4r/3R)$
- For Gauss' Law we need to calculate the charge enclosed.

What are the  
correct limits of  
integration ?

$$q_{enc} = \int \rho(r)dV = \int \rho(r)4\pi r^2 dr$$

$$V = (4\pi/3)r^3; dV = 4\pi r^2 dr$$

$$E4\pi r^2 = q_{enc}(r)/\epsilon_0$$