Homework Due September 29

1. An electric field is given in Cartesian coordinates by

$$\vec{E} = 3x\hat{x} + 2z\hat{z}$$

in N/C, with x and z in meters. Find the flux of this field through each of the six sides of a unit cube, with one vertex at the origin and one at (1,1,1).

2. An electric field is given in cylindrical coordinates by

$$\vec{E} = 3r\hat{r} + 2z\hat{z}$$

with the field in N/C, r and z in meters. Find the flux of this field through

(a) the side and (b) each end of the cylinder defined by *r=2, z=[0,3].*