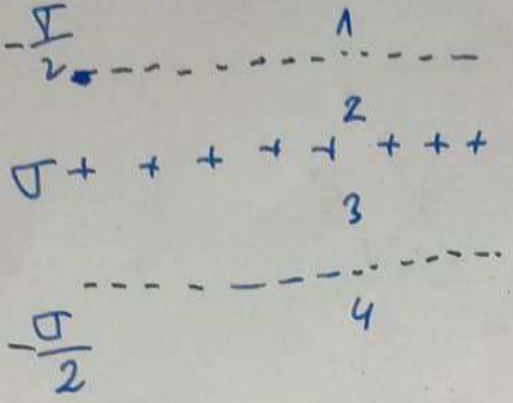
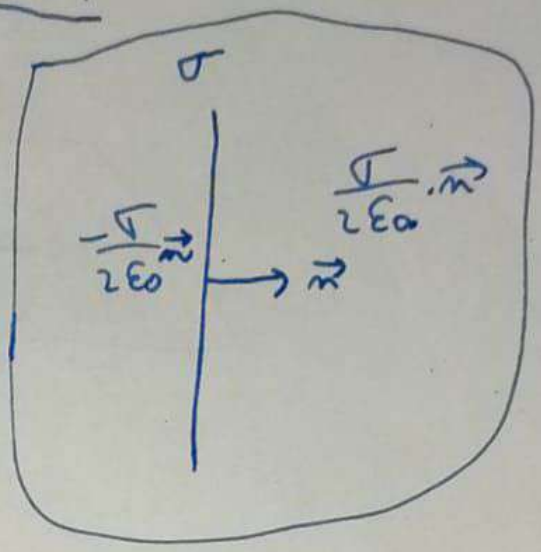
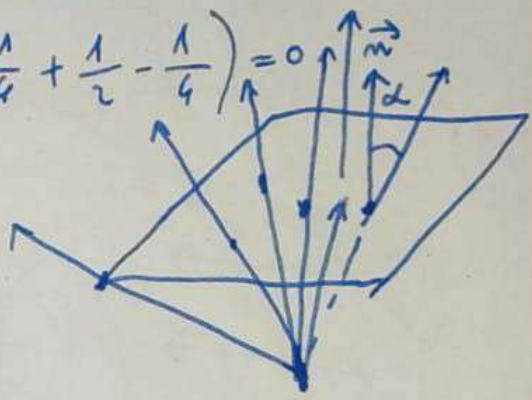
Curs Electricitate 1

47/808





$$E_1 = -\frac{\sigma}{4\varepsilon_0}\vec{n} + \frac{\sigma}{2\varepsilon_0}\vec{n} - \frac{\sigma}{4\varepsilon_0}\vec{n} = \vec{n}\frac{\sigma}{\varepsilon_0}\left(-\frac{1}{4}+\frac{1}{2}-\frac{1}{4}\right) = 0$$

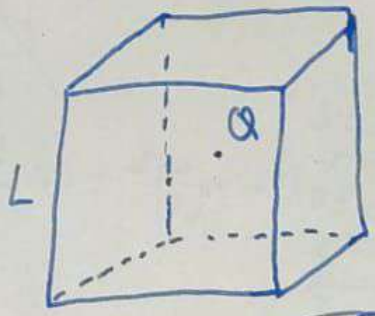


33/807

$Q = 10\,mC$

$L = 2\,m$

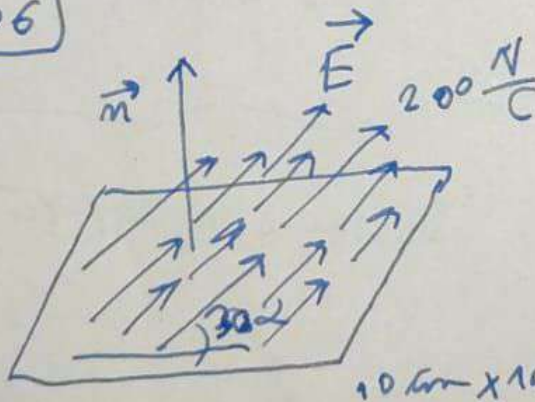
$\Phi_{pus} = ?$



$\Phi_{total} = \frac{Q}{\varepsilon_0}$

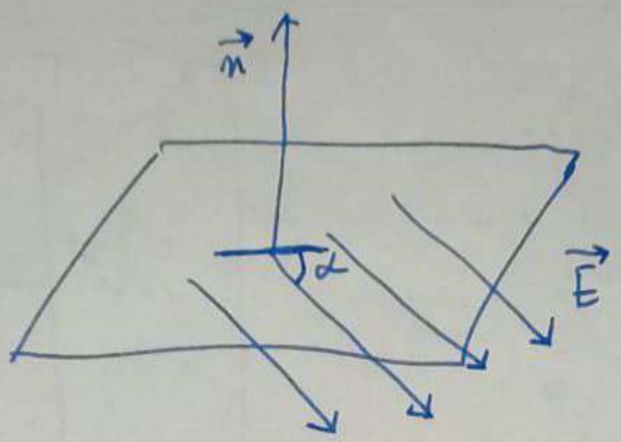
$$\Phi_{pus} = \frac{\Phi_{total}}{6} = \frac{Q}{6\varepsilon_0}$$

9/806

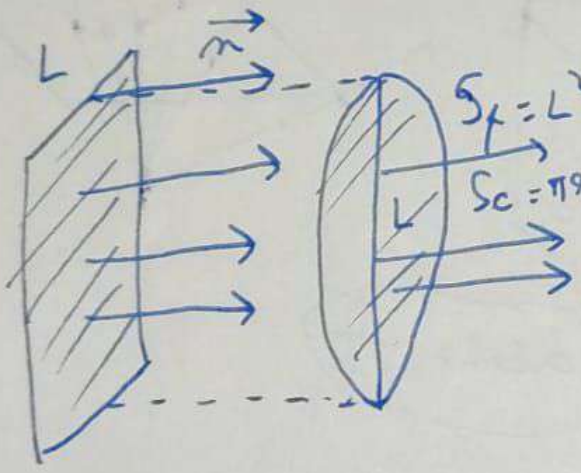


$$\Phi = \vec{E}\cdot\vec{n}\cdot S = E\cdot 1\cdot \cos(\sphericalangle \vec{E},\vec{n}) = 200\cdot\frac{1}{2}\cdot 100\cdot 10^{-4}\,\frac{N m^2}{C} = 1\,\frac{N m^2}{C}$$

Caz General:



$$\Phi = \vec{E}\,\vec{n}\,S = E\cos\left(\frac{\pi}{2}+\alpha\right)\cdot S$$



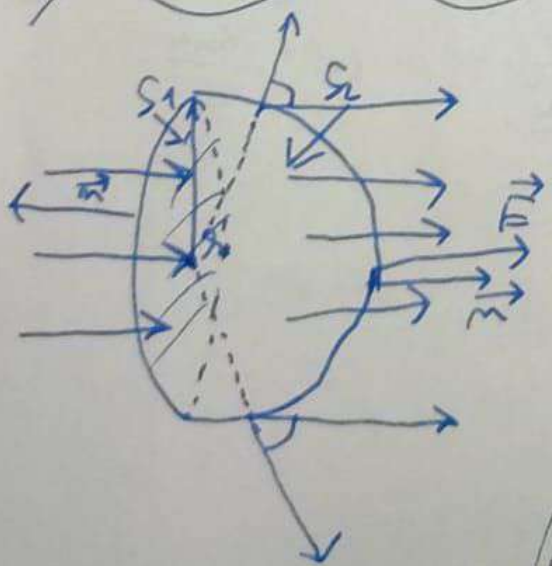
Φ_p ? Φ_c

$S_p = L^2$

$S_c = \pi R^2 = \pi\left(\frac{L}{2}\right)^2 = \pi\frac{L^2}{4} = \frac{\pi}{4}L^2$

$\Phi_p = \vec{E}L^2 \qquad \Phi_c = \vec{E}\frac{\pi L^2}{4}$

$1 > \frac{\pi}{4} \Rightarrow \Phi_p > \Phi_c$



$S_1 = \pi R^2$ S_2 nu e suprafață plană

$\Phi_1 = -\vec{E}\pi R^2$ $\Phi_{(1+2)} = 0 = \Phi_1 + \Phi_2$

$\Rightarrow \Phi_2 = +\vec{E}\pi R^2$

$= -\Phi_1$

Metoda se pune ție afară pe suprafață