

Universidad de Puerto Rico
Recinto Universitario de Mayagüez
Departamento de Ingeniería Eléctrica y Computadoras

INEL 4151 Asignacion #4:

Semana de lunes 26 de septiembre de 2011.

Nombre: _____

Sección: _____

1. Plane $x + 2y = 5$ carries charge $\rho_s = 6 \text{ nC/m}^2$. Determine \mathbf{E} at $(-1, 0, 1)$.

2. A uniform line charge density of 10 nC/m is positioned at $x = 0, y = 2$, while another uniform line charge density of -10 nC/m is positioned at $x = 0, y = -2$. Find \mathbf{E} at the origin.

3. Determine the charge density due to each of the following electric flux densities:
 - a. $\mathbf{D} = 8xy \mathbf{a}_x + 4x^2 \mathbf{a}_y \text{ C/m}^2$
 - b. $\mathbf{D} = 4\rho \sin \phi \mathbf{a}_\rho + 2\rho \cos \phi \mathbf{a}_\phi + 2z^2 \mathbf{a}_z \text{ C/m}^2$
 - c. $\mathbf{D} = (2 \cos \theta)/r^3 \mathbf{a}_r + (\sin \theta)/r^3 \mathbf{a}_\theta \text{ C/m}^2$