3. $\vec{D} = r^{-1}\,\vec{a}_r + \cos\theta\,\vec{a}_\theta + \psi\cos\theta\,\mathrm{sen}\psi\,\vec{a}_\psi \quad \frac{C}{m^2}$ $\qquad P = (5, 25°, 15°)$

a) Gauss $\qquad \oint E\,ds = \frac{q_{enc}}{\epsilon_0} \qquad \rho_s = \nabla D_0$

$$q_{enc} = \int \nabla \cdot D \, dV$$

$$\nabla D = \frac{1}{r^2}\frac{\partial}{\partial r}(r^2 \cdot r^{-1}) + \frac{1}{r\,\mathrm{sen}\theta}\frac{\partial}{\partial \theta}(\mathrm{sen}\theta \cdot \cos\theta) + \frac{1}{r\,\mathrm{sen}\theta}\frac{\partial}{\partial \phi}(\psi\cos\theta\,\mathrm{sen}\psi)$$

$$\nabla D = \frac{r\cos(2\theta)\csc\theta + 1}{r^2}$$

$$\nabla D(P) = \frac{5\cos(2\cdot 25)\csc(25) + 1}{5^2}$$

$$\nabla D(P) = 2{,}15 \frac{C}{m^2} = \rho$$

Densidad de carga $\Rightarrow$ $2{,}15 \frac{C}{m^2}$