Actividad: Problema Coulomb

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Resolución del Problema

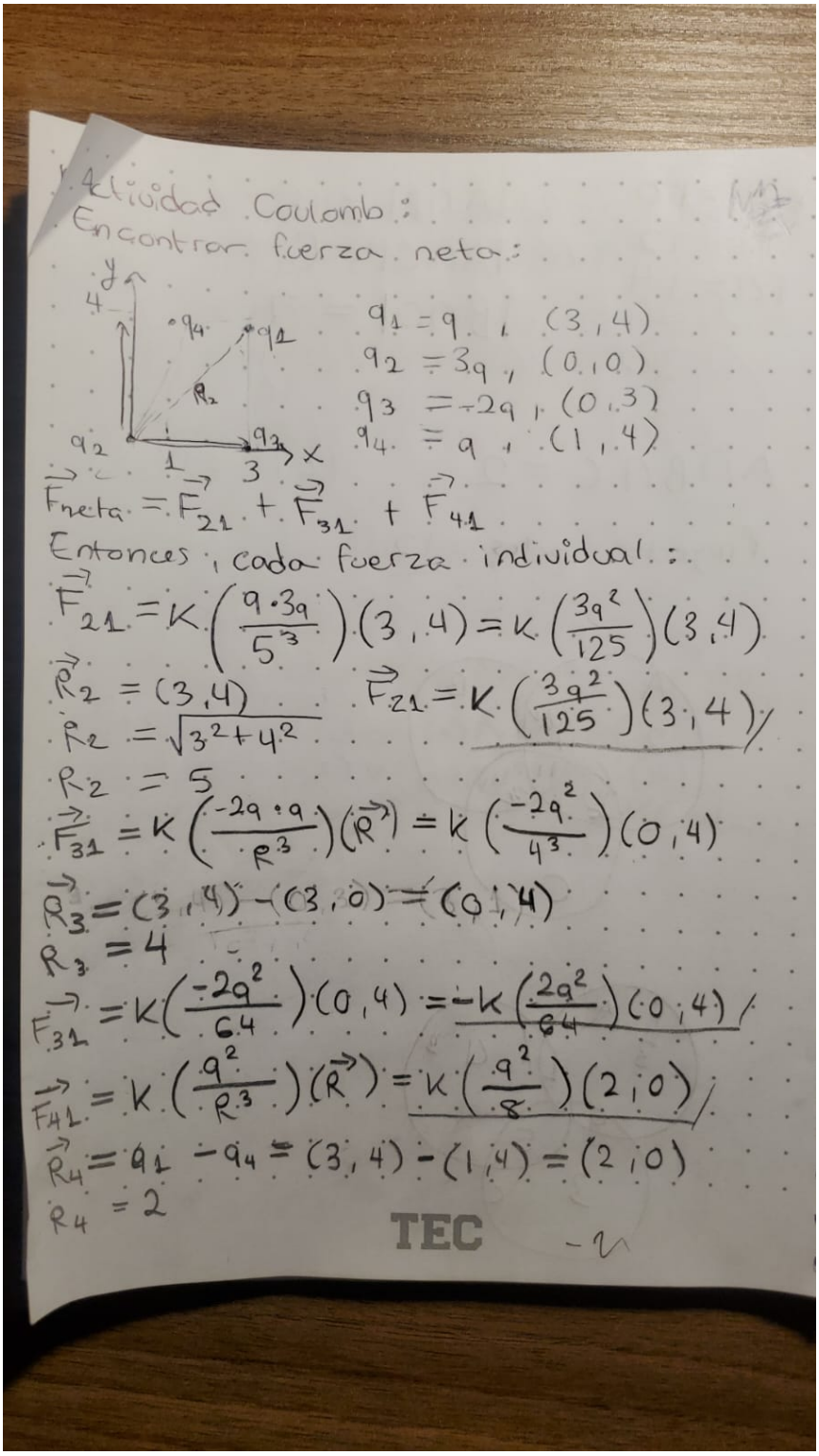

Figura 1: Primera página de solución

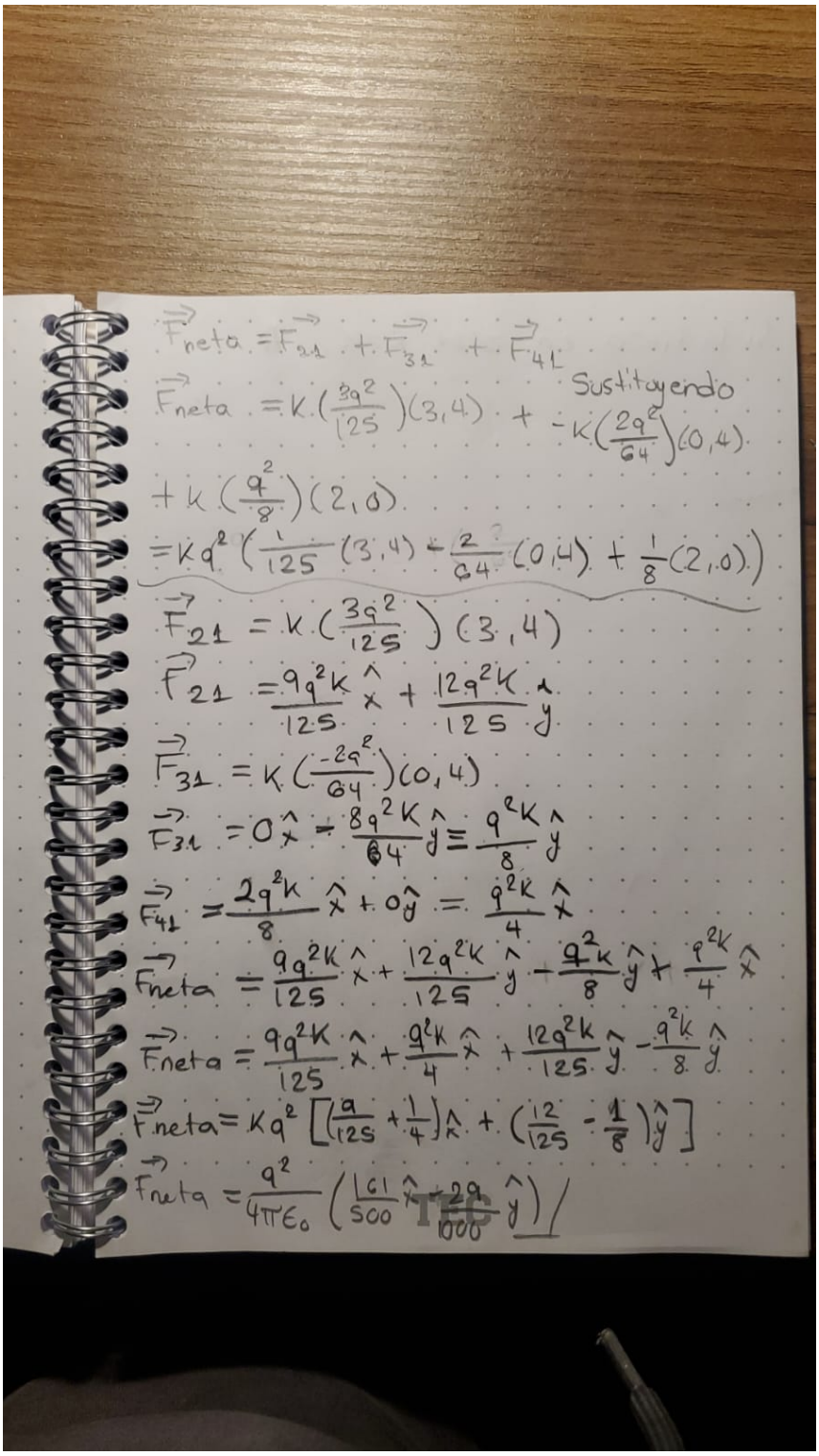
$\vec{F}_{neta} = \vec{F}_{21} + \vec{F}_{31} + \vec{F}_{41}$
Sustituyendo
$\vec{F}_{neta} = k\left(\frac{3q^2}{125}\right)(3,4) + -k\left(\frac{2q^2}{64}\right)(0,4)$
$+ k\left(\frac{q^2}{8}\right)(2,0)$
$= kq^2\left(\frac{1}{125}(3,4) - \frac{2}{64}(0,4) + \frac{1}{8}(2,0)\right)$
$\vec{F}_{21} = k\left(\frac{3q^2}{125}\right)(3,4)$
$\vec{F}_{21} = \frac{9q^2k}{125}\hat{x} + \frac{12q^2k}{125}\hat{y}$
$\vec{F}_{31} = k\left(\frac{-2q^2}{64}\right)(0,4)$
$\vec{F}_{31} = 0\hat{x} - \frac{8q^2k}{64}\hat{y} = \frac{q^2k}{8}\hat{y}$
$\vec{F}_{41} = \frac{2q^2k}{8}\hat{x} + 0\hat{y} = \frac{q^2k}{4}\hat{x}$
$\vec{F}_{neta} = \frac{9q^2k}{125}\hat{x} + \frac{12q^2k}{125}\hat{y} - \frac{q^2k}{8}\hat{y} + \frac{q^2k}{4}\hat{x}$
$\vec{F}_{neta} = \frac{9q^2k}{125}\hat{x} + \frac{q^2k}{4}\hat{x} + \frac{12q^2k}{125}\hat{y} - \frac{q^2k}{8}\hat{y}$
$\vec{F}_{neta} = kq^2\left[\left(\frac{9}{125} + \frac{1}{4}\right)\hat{x} + \left(\frac{12}{125} - \frac{1}{8}\right)\hat{y}\right]$
$\vec{F}_{neta} = \frac{q^2}{4\pi\epsilon_0}\left(\frac{161}{500}\hat{x} + \frac{29}{1000}\hat{y}\right)$

Figura 2