

$10^6$  charge is placed at point (1,2,4) the electric field at a point p(0,-4,3) is?

An electric field surrounds electrically charged particles. The electric field depicts the surrounding force of an electrically charged particle exerted on other electrically charged objects.

The magnitude of the electric field force, E in vacuum, is invertible from Coulomb's law. Since  $E = F / Q$  it follows from the Coulomb's law that the magnitude of the electric field E created by a single point charge q at a certain distance r in vacuum is given by:

$$E = \frac{kq}{r^2}$$

where r distance between points (1,2,4) and (0,-4,3):

$$r = \sqrt{(1-0)^2 + (-4-2)^2 + (4-3)^2} = \sqrt{38}$$

Therefore, if distance in meters and charge in C:

$$E = 9 * 10^9 * \frac{10^6}{38} = 2.36 * 10^{14} \text{ N/C}$$

Answer:  $E = 2.36 * 10^{14} \text{ N/C}$