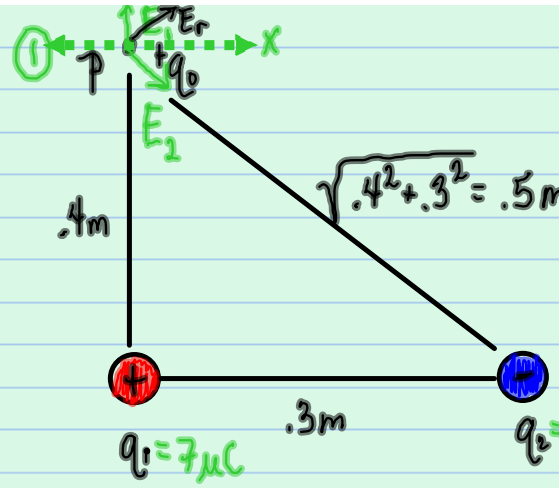

adj / hyp

q_0 + charge

$E = \frac{F}{q_0}$

$E = \frac{F}{q}$

① $E_1 = \frac{kq_1}{r_1^2} = \frac{9\times10^9(7\times10^{-6})}{.4^2} = 3.9\times10^5 \frac{N}{C}$

$E_2 = \frac{kq_2}{r_2^2} = \frac{9\times10^9(-5\times10^{-6})}{.5^2} = 1.8\times10^5 \frac{N}{C}$

$\cos\theta = \frac{adj}{hyp}$

$\sin\theta = \frac{opp}{hyp}$

② $\Sigma E_x = E_2\cos\theta = E_2\left(\frac{.3}{.5}\right) = 1.8\times10^5\left(\frac{.3}{.5}\right) = 108000 \frac{N}{C}$

$\Sigma E_y = E_1 - E_2\sin\theta = E_1 - E_2\left(\frac{.4}{.5}\right) = 3.9\times10^5 - 1.8\times10^5\left(\frac{.4}{.5}\right) = 249000 \frac{N}{C}$

E_r

③ $E_r = \sqrt{108000^2 + 249000^2} = 2.72\times10^5 \frac{N}{C}$

$\theta = \tan^{-1}\frac{249}{108} = 67°$