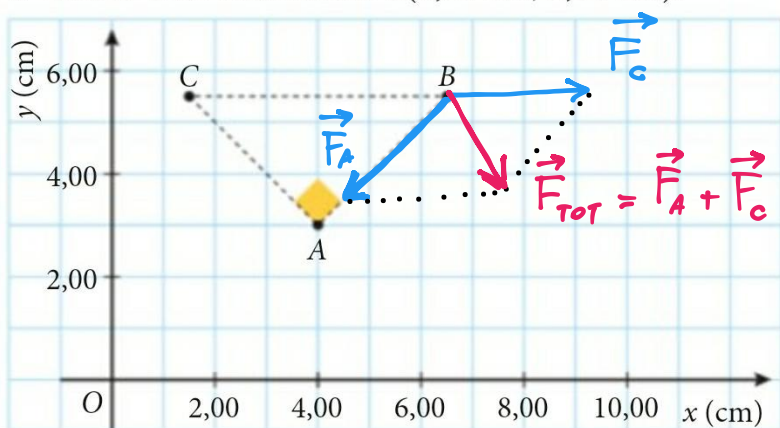


In un piano tre cariche puntiformi $Q_A = 27 \text{ pC}$, $Q_B = -14 \text{ pC}$ e $Q_C = -11 \text{ pC}$, sono poste in corrispondenza dei vertici di un triangolo rettangolo ABC , rettangolo in $A(4,00 \text{ cm}; 3,00 \text{ cm})$ e isoscele. Il vertice C ha coordinate $C(1,50 \text{ cm}; 5,50 \text{ cm})$.



- Determina le componenti lungo x e lungo y delle forze esercitate da Q_A e da Q_C su Q_B .
- Determina il modulo della forza risultante che agisce su Q_B

~~$[-1,92 \times 10^{-9} \text{ N}; -1,92 \times 10^{-9} \text{ N}; 1,51 \times 10^{-9} \text{ N};$
 $-1,51 \times 10^{-9} \text{ N}; 3,45 \times 10^{-9} \text{ N}]$~~

25/9/2021

$$\vec{F}_A = \left(-\frac{\sqrt{2}}{2} F_A, -\frac{\sqrt{2}}{2} F_A \right)$$

$$\vec{F}_C = (F_C, 0)$$

$$F_A = k_0 \frac{|Q_A||Q_B|}{AB^2} =$$

$$= 8,99 \times 10^9 \frac{27 \cdot 14 \times 10^{-24}}{12,5 \times 10^{-4}} \text{ N}$$

$$= 271,8576 \times 10^{-11} \text{ N}$$

$$A(4, 3) \quad B(6,5, 5,5)$$

$$AB^2 = (6,5 - 4)^2 + (5,5 - 3)^2 =$$

$$= (2,5)^2 + (2,5)^2 = 2 \cdot 6,25 =$$

$$= 12,5 \text{ (cm}^2\text{)}$$

$$\frac{\sqrt{2}}{2} F_A = 1,9223 \dots \times 10^{-9} \text{ N} \approx 1,92 \times 10^{-9} \text{ N}$$

$$\vec{F}_A = (-1,92 \times 10^{-9} \text{ N}, -1,92 \times 10^{-9} \text{ N})$$

$$F_C = k_0 \frac{|Q_C||Q_B|}{BC^2} = 8,99 \times 10^9 \frac{11 \cdot 14 \times 10^{-24}}{(6,50 - 1,50)^2 \times 10^{-4}} \text{ N} = 55,3784 \times 10^{-11} \text{ N}$$

$$\approx 5,54 \times 10^{-10} \text{ N}$$

$$\vec{F}_c = (5,54 \times 10^{-10} \text{ N}, 0)$$

$$\begin{aligned}\vec{F}_{\text{TOT}} &= \vec{F}_A + \vec{F}_c = \left((-1,9223 + 0,55378) \times 10^{-9} \text{ N}, -1,92 \times 10^{-9} \text{ N} \right) \\ &= \left(-1,37 \times 10^{-9} \text{ N}, -1,92 \times 10^{-9} \text{ N} \right)\end{aligned}$$

$$\begin{aligned}F_{\text{TOT}} &= \sqrt{(1,37)^2 + (1,92)^2} \times 10^{-9} \text{ N} = 2,358... \times 10^{-9} \text{ N} \\ &\approx \boxed{2,36 \times 10^{-9} \text{ N}}\end{aligned}$$