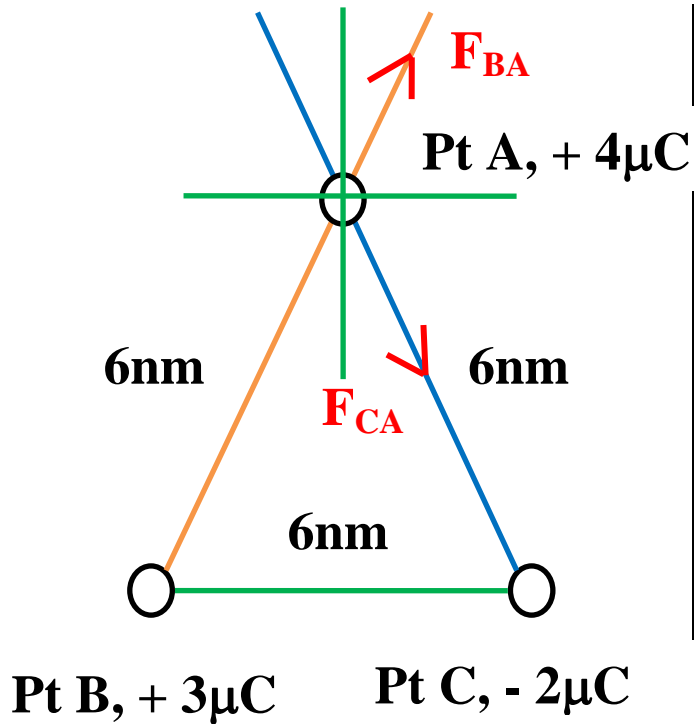
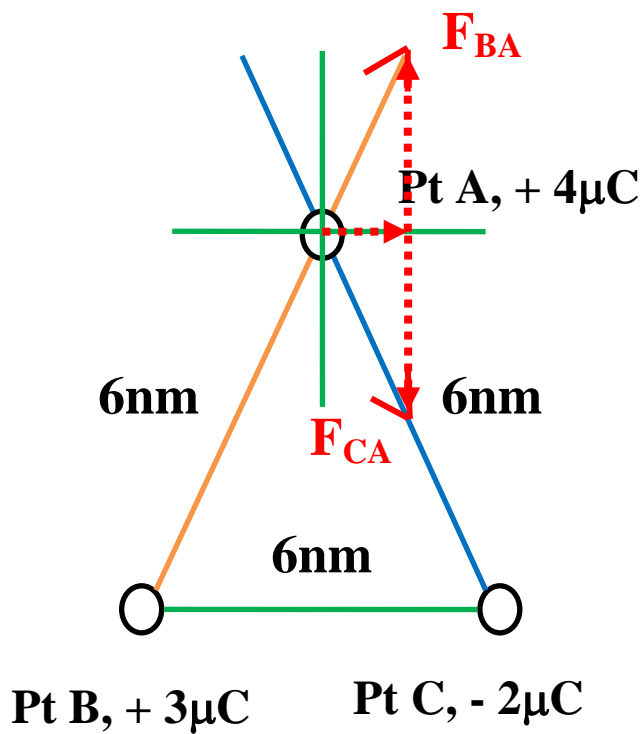


# COULOMB'S LAW SAMPLE PROBLEM



Find the force on A due to B and C



$$F_{BA} = k \frac{Q_1 Q_2}{r^2}$$

$$k = 8.99 \times 10^9 \text{ Nm}^2 \text{ C}^{-2}$$

$$k = 8.99 \times 10^9 \text{ Nm}^2 \text{ C}^{-2}$$

$$F_{BA} = 3.00 \times 10^{15}$$

$$F_{BA_x} = (3.00 \times 10^{15}) \times \cos 60$$

$$F_{BA_x} = +(1.50 \times 10^{15})$$

$$F_{BA_y} = (3.00 \times 10^{15}) \times \sin 60$$

$$F_{BA_y} = +(2.60 \times 10^{15})$$

$$F_{CA} = k \frac{Q_1 Q_2}{r^2}$$

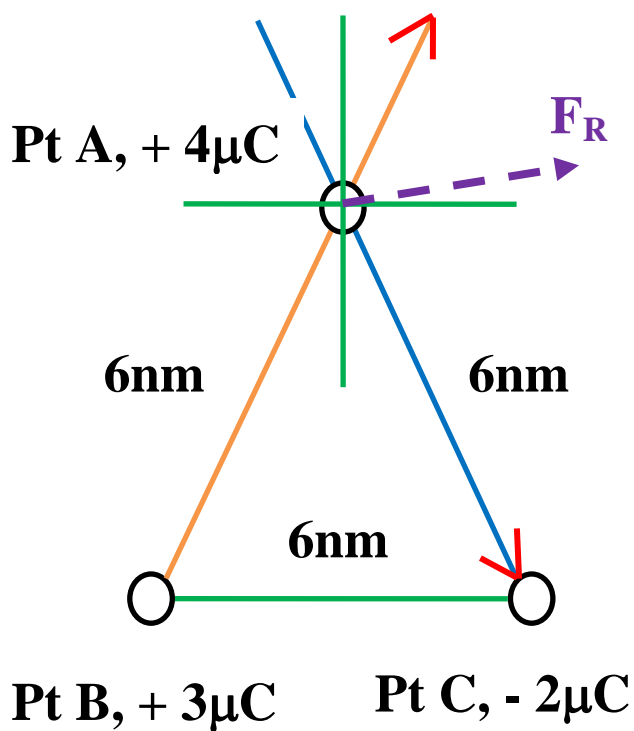
$$F_{CA} = 2.00 \times 10^{15}$$

$$F_{CA_x} = (2.00 \times 10^{15}) \times \cos 60$$

$$F_{CA_x} = +(1.00 \times 10^{15})$$

$$F_{CA_y} = (-2.00 \times 10^{15}) \times \sin 60$$

$$F_{CA_y} = -(1.73 \times 10^{15})$$



$$\begin{aligned}
 F_{R_x} &= F_{BA_x} + F_{CA_x} \\
 &= (1.00 \times 10^{15}) \\
 &\quad + (1.50 \times 10^{15}) \\
 &= (2.50 \times 10^{15})
 \end{aligned}$$

$$\begin{aligned}
 F_{R_y} &= F_{BA_y} + F_{CA_y} = \\
 F_{R_y} &= F_{BA_y} + F_{CA_y} = \\
 (2.60 \times 10^{15}) &+ \\
 (-1.73 \times 10^{15}) &= (0.87 \times 10^{15})
 \end{aligned}$$

$$a^2 + b^2 = c^2$$

$$F_R = \sqrt{F_{R_x}^2 + F_{R_y}^2}$$

$$F_R = 2.65 \times 10^{15} \text{ N}$$

$$\tan \theta = \frac{F_{R_y}}{F_{R_x}}, \theta = 19.2^\circ$$