$+q$

$+Q$

$-q$

$\vec{F}_-$ $\vec{F}_+$

$\vec{F}_{net}$

$\vec{F}_Q = ?$

$\vec{F}_{x-}$ F_{x+}

$F_{y-} = F_{y+}$

$\vec{F}_{net}$

$$\left|\vec{F}_+\right| = F_+ = k\frac{|q||Q|}{r^2}$$

$$r^2 = \left(\frac{d}{2}\right)^2 + x^2$$

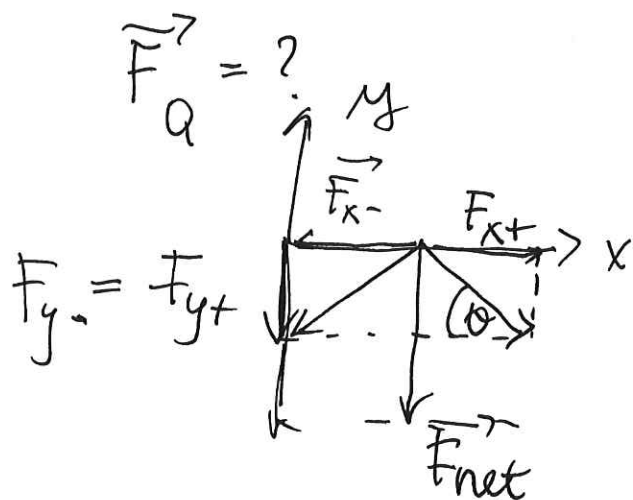$$\boxed{F_+ = k\frac{|q||Q|}{\left(\frac{d}{2}\right)^2 + x^2}}$$

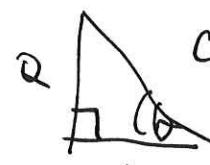$$\vec{F}_{net} = 2F_{y+}$$

$$\frac{F_y}{F} = \sin\theta$$

$$\sin\theta = \frac{\left(\frac{d}{2}\right)}{r} = \boxed{\frac{\left(\frac{d}{2}\right)}{\sqrt{\left(\frac{d}{2}\right)^2 + x^2}}}$$

$$F_y = F \cdot \sin\theta$$

$$F_y = k\frac{|q||Q|}{\left(\frac{d}{2}\right)^2 + x^2} \cdot \frac{\frac{d}{2}}{\sqrt{\left(\frac{d}{2}\right)^2 + x^2}}$$

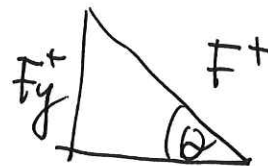$$r^2 = \left(\frac{d}{2}\right)^2 + x^2$$

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

$$F_+ = F_-$$

$$\frac{a}{c} = \sin\theta$$

$$\frac{b}{c} = \cos\theta$$

$$\frac{a}{b} = \tan\theta$$

F_y^+ F^+

$$F_y = k \frac{|q||Q|\frac{d}{2}}{\left(\left|\frac{d}{2}\right|^2 + x^2\right)^{3/2}}$$

$$F_{net} = 2F_y = 2k \frac{|q||Q|\frac{d}{2}}{\left(\left(\frac{d}{2}\right)^2 + x^2\right)^{3/2}}$$

$$F_{net} = \frac{k|q||Q|d}{\left(\left(\frac{d}{2}\right)^2 + x^2\right)^{3/2}}$$

$$\vec{F}_{net} = \frac{k|q||Q|d}{\left(\left(\frac{d}{2}\right)^2 + x^2\right)^{3/2}} \ (-\hat{j})$$