Coloumb's Law

$$ec{F}=rac{1}{4\pi\epsilon}rac{q_1q_2}{R^2}\hat{R}_{12}$$

$$ec{R}_{12}=ec{R}_2-ec{R}_1$$

Cylindrical Coordinates

$$egin{aligned} \langle r, heta,z
angle\ &r=\sqrt{x^2+y^2}\ & heta=rctan(rac{y}{x}) \end{aligned}$$

Spherical Coordinates

$$\langle r, \phi, heta
angle$$

Electric Field

- Is a vector field defines the electrostatic force F that is exerted on a positive charge q.
- $\bullet~$ Units of $V/m~\mbox{or}~N/C$

$$ec{E}=rac{ec{F}}{q}$$

$$ec{E}=rac{1}{4\pi\epsilon}rac{q}{R^2}\hat{R}$$

Direction is determined by where a positive test charge will go