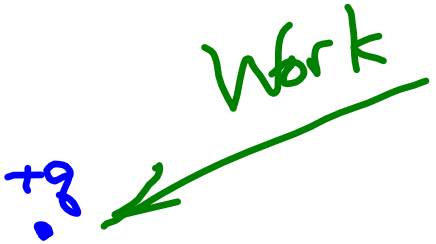
Ch 17

Electric potential



$$V = \frac{PE}{q}$$

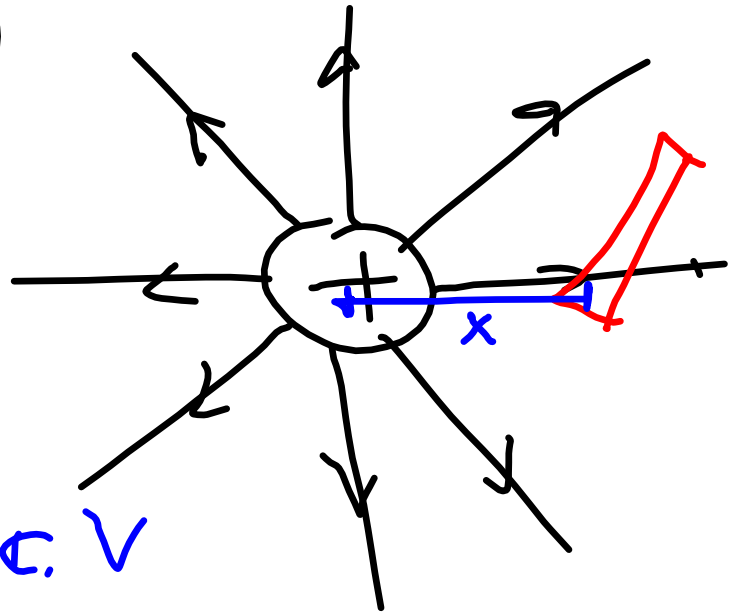
Units volt $= \frac{\text{joule}}{\text{Coulomb}} = \frac{J}{C}$

$$V = \frac{1}{4\pi\varepsilon_0}\frac{q}{r}$$ Scalar

$$V_{ab} = V_a - V_b = \frac{W}{q} = \frac{F \cdot r}{q} = \frac{Fr\cos\theta}{q}$$

Potential gradient

$$E_x = -\frac{\Delta V}{\Delta x}$$

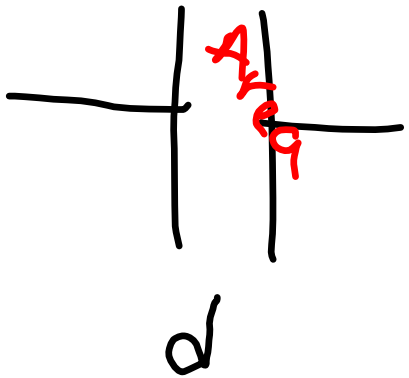


neg means $\vec{E}$ is in direction of inc. V

$$E = -\frac{dV}{dx}$$

Capacitance

$$C = \frac{Q}{V}$$



$$C = K\epsilon_0 \frac{A}{d}$$