

ELECTRIC POTENTIAL ENERGY AND ELECTRIC POTENTIAL CONTINUED

IF MULTIPLE POINT CHARGES ... ELECTRIC POTENTIAL @ POINT P...

$$V_{TOTAL}(P) = \sum_i V_i(P) = V_1(P) + V_2(P) + V_3(P) + \dots$$

DEFINE ZERO OF V @ $r = \infty$

CHANGE IN ELECTRIC POTENTIAL ENERGY...

$$\Delta U^E = q_0 \Delta V$$

UPDATE ENERGY...

$$E_{TOTAL} = KE_{TRANSLATIONAL} + KE_{ROTATIONAL} + U^G + U^S + U^E + U^{CHEM} + E^{TH} + \dots$$

↑
ELECTRIC POTENTIAL ENERGY.

$$\sum E_{TOTAL,i} + W_{EXT} = \sum E_{TOTAL,f}$$

EQUIPOTENTIAL LINES ... PASS THROUGH LOCATIONS IN SPACE WITH SAME ELECTRIC POTENTIAL VALUE CREATED BY CHARGE DISTRIBUTION

EQUIPOTENTIAL LINES ARE \perp TO ELECTRIC FIELD LINES.

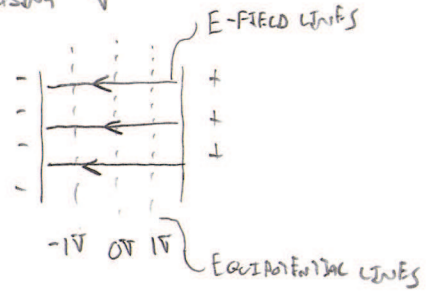
$$\nabla \perp \vec{E}$$

USE EQUIPOTENTIALS TO FIND \vec{E} .

$$\vec{E}_x = -\frac{\Delta V}{\Delta x} \Rightarrow \vec{E} = -\left\langle \frac{\Delta V}{\Delta x}, \frac{\Delta V}{\Delta y}, \frac{\Delta V}{\Delta z} \right\rangle$$

* GRADIENT ... "3D-SLOPE"

\vec{E} POINTS TOWARDS DECREASING V



SUMMARY

