9)

$2\mu C$ A $2\mu C$

3 cm

same charges

$$V_A = V_L + V_R = k\frac{q_L}{r_L} + k\frac{q_R}{r_R} = 2k\frac{q}{r}$$

$$V_A = 2(9\cdot 10^{9}\,\frac{Nm^2}{C^2})\,\frac{2\cdot 10^{-6}\,C}{1.5\cdot 10^{-2}\,m} = \frac{4\cdot 9^{6}}{1.5}\cdot 10^{5}\,V$$

$$\boxed{V_A = 2.4\cdot 10^{6}\,V}$$

E_1 E_1 — same distance same charge.

$$\Rightarrow \boxed{E_{net} = 0}$$

10)

$2\mu C$ A $-2\mu C$

3 cm

$$V_A = V_L + V_R = k\frac{q_L}{r_L} + k\frac{q_R}{r_R} = k\frac{q_L}{r_L} - k\frac{q_R}{r_r} = 0$$

$\boxed{V_A = 0}$ no energy needed

this ΔV is negative due to − charge.

E_1 E_1

$$\Rightarrow E_{net} = 2E_1 = 2k\frac{q_s}{r^2} = 2\cdot 9\cdot 10^{9}\cdot\frac{2\cdot 10^{-6}\,C}{(1.5\cdot 10^{-2})^2\,m^2}$$

$$E_{net} = \frac{4\cdot 9}{2\cdot 2}\cdot\frac{10^{9}\cdot 10^{-6}}{10^{-4}}\,V/m = 16\cdot 10^{7}\,V/m$$

$$\boxed{E_{net} = 1.6\cdot 10^{8}\,V/m}$$