

$$\vec{F}_c = \left(\frac{kq^v}{4a^2} + \frac{kq^v}{2a^v} \cdot \frac{\sqrt{2}}{2} - \frac{kq^v}{2a^v} \frac{\sqrt{2}}{2} \right) \vec{i}$$

$$+ \frac{\sqrt{2}}{2} \left(\frac{kq^v}{2a^v} + \frac{kq^v}{2a^v} \right) \vec{j}$$

$$= \left(\frac{kq^v}{4a^v} + \frac{\sqrt{2}kq^v}{4a^v} - \frac{\sqrt{2}kq^v}{4a^v} \right) \vec{i}$$

$$+ \frac{\sqrt{2}}{2} \left(\frac{2kq^v}{2a^v} \right) \vec{j}$$

$$= \frac{kq^v}{2a^v} \left[\left(\frac{1}{2} + \frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{2} \right) \vec{i} + \sqrt{2} \vec{j} \right]$$

$$+ kq^v \left(\frac{2\sqrt{2}}{2} \right) \vec{j}$$

$$= \frac{kq^v}{2a^v} \left[\left(\frac{1}{2} \right) \vec{i} + \sqrt{2} \vec{j} \right]$$

$$\vec{F}_c = \frac{kq^v}{2a^v} \left(\frac{1}{2} \vec{i} + \sqrt{2} \vec{j} \right) \text{ N}$$

$$|\vec{F}_c| = \frac{kq^v}{2a^v} \sqrt{\frac{1}{4} + 2} =$$

$$|\vec{F}_c| = \frac{3kq^v}{4a^v} \text{ N}$$

2) le champ électrostatique au point c

$$\text{on a: } \vec{F}_c = q \vec{E}$$

$$\vec{E}_c = \frac{\vec{F}_c}{q_c} = \frac{kq^v}{2a^v} \left(\frac{1}{2} \vec{i} + \sqrt{2} \vec{j} \right)$$

$$\vec{E}_c = -\frac{kq}{2a^2} \left(\frac{1}{2} \vec{i} + \sqrt{2} \vec{j} \right)$$

V/m/N/c (2)

$$|\vec{E}_c| = \frac{|\vec{F}_c|}{|q_c|}$$

$$= \frac{3}{4} \frac{kq}{a^v} \text{ N/m}$$

3) le potentiel en c

$$V_0 = V_A + V_B + V_C + V_D$$

$$= \frac{kq_A}{OA} + \frac{kq_B}{OB} + \frac{kq_C}{OC}$$

$$+ \frac{kq_D}{OD}$$

$$= \frac{kq}{a} + \frac{kq}{a} - \frac{kq}{a} - \frac{kq}{a}$$

$$= 0V$$