

4.)  $U = 1 \text{ kV}$   $d = 5 \text{ cm}$   $\alpha = 60^\circ$   $\vec{B} = ?$   $e^-$   $m = 9,1 \cdot 10^{-31} \text{ kg}$   
 a.)  $\vec{B} \perp f(C \text{ nélk})$  b.)  $\vec{B} \parallel \vec{AC}$   $q = -e = -1,6 \cdot 10^{-19} \text{ C}$

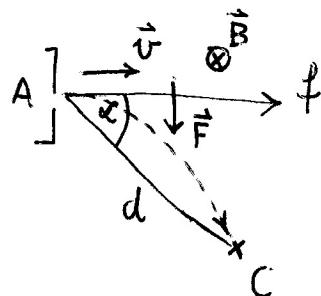
$$\begin{array}{|c|c|c|} \hline W = qU & W = \Delta E_k & E_k = \frac{1}{2}mv^2 \\ \hline \end{array}$$

$$\begin{array}{|c|c|} \hline \vec{F} = q\vec{v} \times \vec{B} & a_{cp} = \frac{v^2}{R} \\ \hline \end{array}$$

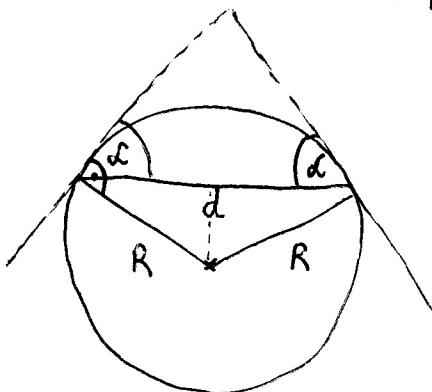
$e^-$  sebessége:  $W = eU = \Delta E_k$

$$eU = \frac{1}{2}mv^2 \Rightarrow v = \underline{\underline{v}}$$

a.)



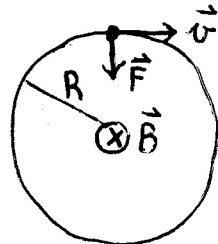
$$\vec{F} = -e\vec{v} \times \vec{B} \rightarrow \vec{B} \text{ befélé!}$$



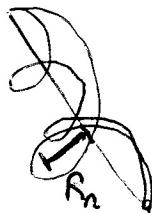
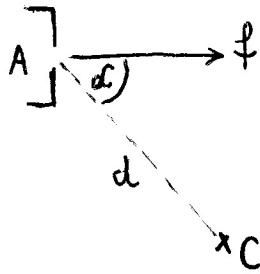
$$\frac{d/2}{R} = \omega s 30^\circ$$

$$R = \frac{d}{2 \omega s 30^\circ} = \dots$$

$$\begin{aligned} F_e &= ma \\ evB &= m \frac{v^2}{R} \\ \downarrow \\ B &= \underline{\underline{B}} \end{aligned}$$



b.)

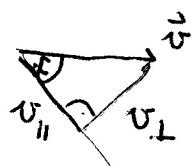


spiral alakú mozgás

$T$ : periódusido"

$t$ : repülési idő

$t = nT_n$  kell legyen  
sugár  $R_n$



$$\begin{aligned} v_{||} &= v \cos \alpha \\ v_{\perp} &= v \sin \alpha \end{aligned}$$

$$ev_{\perp} B_n = m \frac{v_{\perp}^2}{R_n}$$

$$R_n = \frac{mv_{\perp}}{eB_n}$$

$$\frac{2R_n \pi}{v_{\perp}} = T_n$$

$$T_n = 2\pi \frac{m}{eB_n} \Rightarrow B_n = \underline{\underline{B_n}}$$

$$t = \frac{d}{v_{||}} = \dots$$

$$T_n = \frac{t}{n} = \dots$$