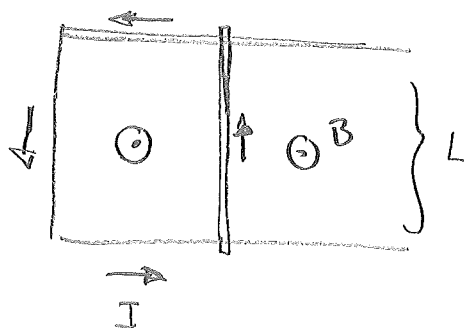


HW solution #10.

27.72 a)  $F = ILB$   
to the right



b)  $v^2 = 2ad = 2 \frac{F}{m} d$

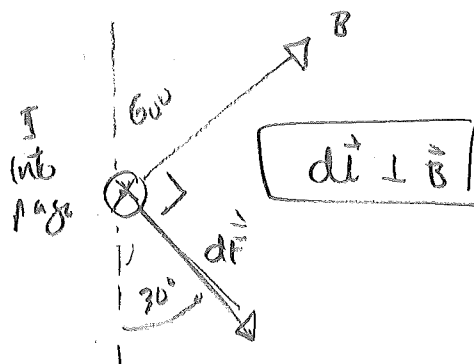
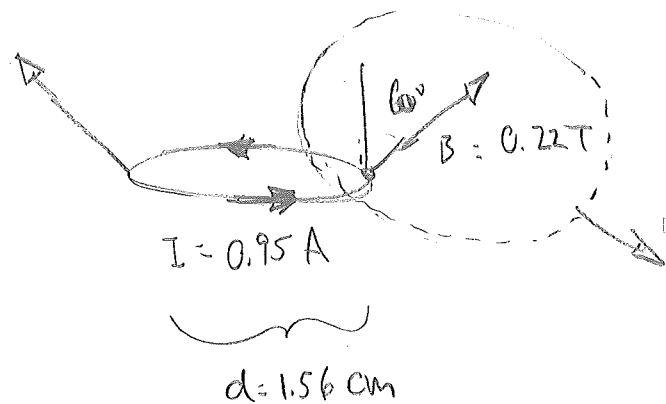
$$d = \frac{mv^2}{2F}$$

or use work-energy thm:  $F \cdot d = \Delta K = \frac{1}{2} mv^2$

$$d = \frac{mv^2}{2ILB}$$

c)  $d = \frac{25 \cdot (11.2 \times 10^3)^2}{2 \cdot 2 \times 10^3 \cdot 0.5 \cdot 0.5} = 3136 \text{ km}$  to reach escape speed

27.79  
Voice  
coil



$$F_z = \int dF_z = \int \frac{\sqrt{3}}{2} I dl B$$

$$dF_z = dF \cdot \cos 30^\circ = \frac{\sqrt{3}}{2} dF$$

$dF_x, dF_y$  cancel by symmetry.

$$= \frac{\sqrt{3}}{2} \cdot 2\pi r \cdot B \cdot I \cdot N$$

# of turns = 50

$$= \frac{\sqrt{3}}{2} \cdot \pi \cdot d \cdot B \cdot I \cdot N = 0.44 \text{ N}$$

downward.