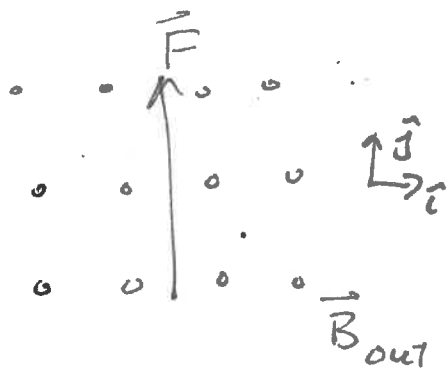
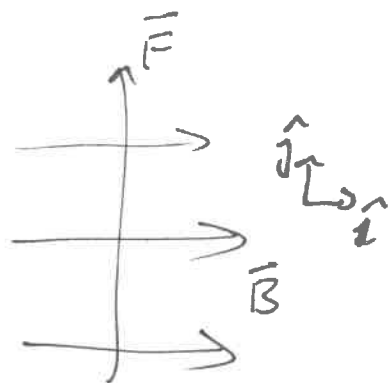


Ch. 11 Prob. 17

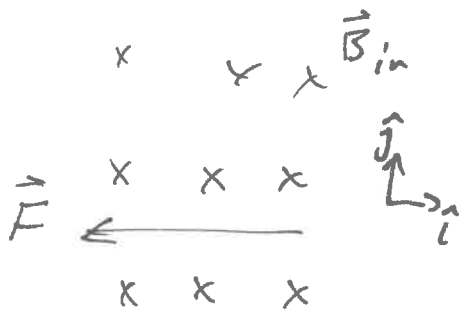


a)



$$b) \vec{F} = F \hat{j}$$

$$\vec{B} = B \hat{i}$$



$$c) \vec{F} = -F \hat{j}$$

$$\vec{B} = -B \hat{k}$$

$$\therefore \vec{v} = -v \hat{j}$$

Find the velocity of a negative charge in each of these cases

$$\vec{F} = q \vec{v} \times \vec{B}$$

$$a) \vec{F} = F \hat{j}$$

$$\vec{B} = B \hat{k}$$

$$\text{for } F \hat{j} = -|q| (\vec{v} \times B \hat{k})$$

$$-F \hat{j} = |q| (\vec{v} \times B \hat{k})$$

what direction cross-product into \hat{k} gives negative \hat{j} ?

with Right Hand Rule

\vec{v} is in the $+\hat{i}$ direction

$$F \hat{j} = -|q| (\vec{v} \times B \hat{i})$$

$$-F \hat{j} = \vec{v} \times B \hat{i}$$

if $\vec{v} = -v \hat{k}$ then

$$-F \hat{j} = -v \hat{k} \times B \hat{i} \text{ is true}$$

$\therefore \vec{v}$ is in the $-\hat{k}$ direction

$$-F \hat{i} = -|q| (\vec{v} \times B \hat{k})$$

$$-F \hat{i} = |q| (\vec{v} \times B \hat{k})$$

if $\vec{v} = -v \hat{j}$ then

$$-F \hat{i} = |q| (-v \hat{j} \times B \hat{k})$$

$$F \hat{i} = |q| v B (\hat{j} \times \hat{k}) \text{ is true}$$