

# Homework for Thursday, July 14, 2005 (Bastille Day)

Name \_\_\_\_\_ Section \_\_\_\_\_

For each of the following situations a circuit loop is shown in a uniform external magnetic field  $\vec{B}$ . Determine in each case the direction (clockwise or counterclockwise) of the induced current in the loop.



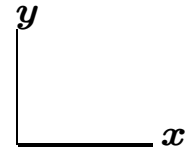
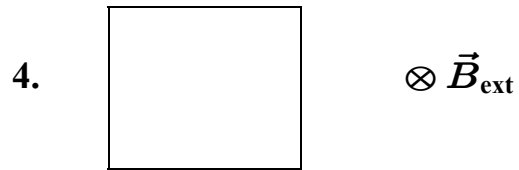
The magnitude  $B$  of the magnetic field is increasing.



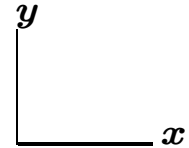
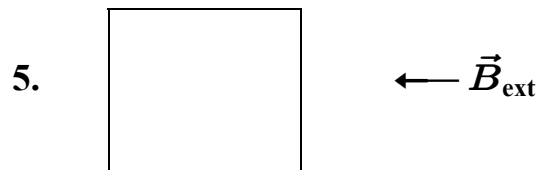
The magnitude  $B$  of the magnetic field is increasing.



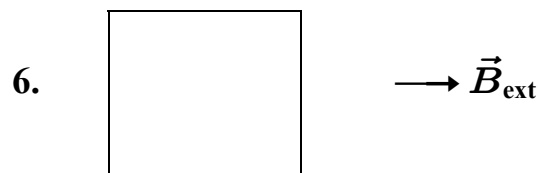
The magnitude  $B$  of the magnetic field is decreasing.



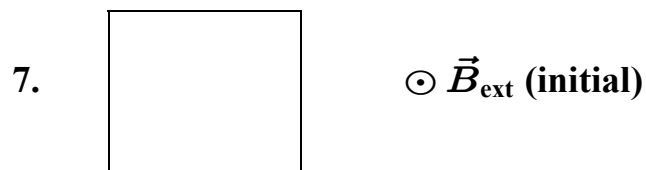
The magnitude  $B$  of the magnetic field is decreasing.



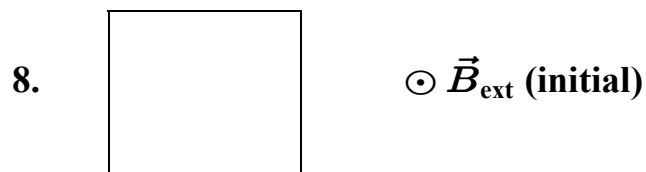
The magnitude  $B$  of the magnetic field is increasing.



The magnitude  $B$  of the magnetic field is decreasing.

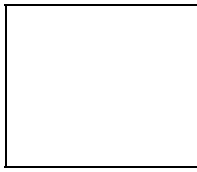
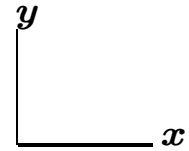


$\vec{B}$  is rotating through  $90^\circ$  to line up with the  $x$  axis.



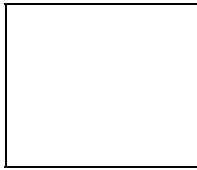
$\vec{B}$  is rotating through  $90^\circ$  to line up with the  $y$  axis.

9.


 $\longrightarrow \vec{B}_{\text{ext}} \text{ (initial)}$ 


$\vec{B}$  is rotating through  $90^\circ$  to line up with the  $y$  axis.

10.


 $\longleftarrow \vec{B}_{\text{ext}} \text{ (initial)}$ 

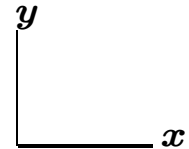

$\vec{B}$  is rotating through  $90^\circ$  to line up with the  $-z$  ( $\otimes$ ) direction.

11.


 $\odot \vec{B}_{\text{ext}} \text{ (initial)}$ 

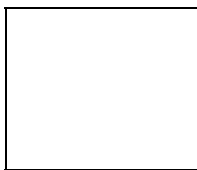

$\vec{B}$  rotates through  $90^\circ$  to line up with the  $-x$  direction and continues rotating through another  $90^\circ$  until it is lined up with the  $-z$  ( $\otimes$ ) direction.

12.


 $\otimes \vec{B}_{\text{ext}} \text{ (initial)}$ 


$\vec{B}$  is rotating through  $90^\circ$  to line up with the  $+x$  direction and also decreasing in magnitude.

13.


 $\otimes \vec{B}_{\text{ext}} \text{ (initial)}$ 


$\vec{B}$  is rotating through  $90^\circ$  to line up with the  $+y$  direction and also increasing in magnitude.