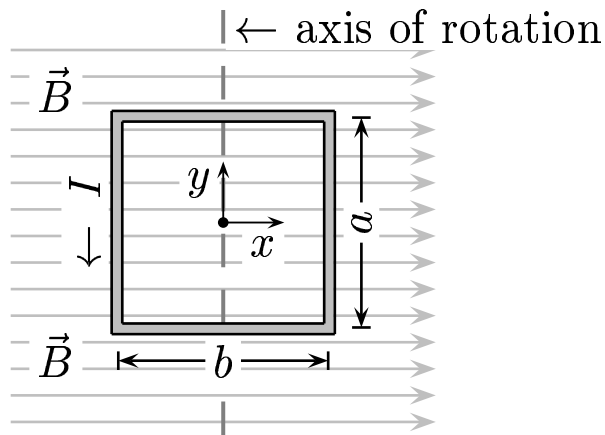


Current  $I$  is counterclockwise. Loop area is  $a \times b$ .  $\vec{B}$  is along  $-\hat{i}$ , the negative  $x$ -axis.



Find the direction of torque  $\tau$  due to  $\vec{B}$ .

- A) The direction of  $\tau$  is along  $+j$ , the positive  $y$ -axis.
- B) The direction of  $\tau$  is along  $-j$ , the negative  $y$ -axis.
- C) The direction of  $\tau$  is along  $+k$ , the positive  $z$ -axis.
- D) The direction of  $\tau$  is along  $-k$ , the negative  $z$ -axis.

The force on the left side is out from the page and on right side is opposite to it; *i.e.*, into the page. This leads to a counter-clockwise rotation as view from the top. Right-hand-rule of rotation gives direction of  $\tau$  to be along  $+j$ , the positive  $y$ -axis. Check that it agrees with  $\tau = \mu \vec{B}$ , where  $\mu$  is the dipole moment.

Answer **A**.