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 τ 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.

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