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.