Solve: In coordinate system I, \( \vec{A} = -(4 \text{ m})\hat{j} \), so \( A_x = 0 \text{ m} \) and \( A_y = -4 \text{ m} \). The vector \( \vec{B} \) makes an angle of 60° counterclockwise from vertical, which makes it have an angle of \( \theta = 30^\circ \) with the \(-x\)-axis. Since \( \vec{B} \) points to the left and up, it has a negative \( x \)-component and a positive \( y \)-component. That is, \( B_x = -(5.0 \text{ m})\cos 30^\circ = -4.3 \text{ m} \) and \( B_y = +(5.0 \text{ m})\sin 30^\circ = 2.5 \text{ m} \). Thus, \( \vec{B} = -(4.3 \text{ m})\hat{i} + (2.5 \text{ m})\hat{j} \).

In coordinate system II, \( \vec{A} \) points to the left and down, and makes an angle of 30° with the \(-y\)-axis. Therefore, \( A_x = -(4.0 \text{ m})\sin 30^\circ = -2.0 \text{ m} \) and \( A_y = -(4.0 \text{ m})\cos 30^\circ = -3.5 \text{ m} \). This implies \( \vec{A} = -(2.0 \text{ m})\hat{i} - (3.5 \text{ m})\hat{j} \).

The vector \( \vec{B} \) makes an angle of 30° with the \(+y\)-axis and is to the left and up. This means we have to manually insert a minus sign with the \( x \)-component. \( B_x = -B\sin 30^\circ = -(5.0 \text{ m})\sin 30^\circ = -2.5 \text{ m} \), and \( B_y = +B\cos 30^\circ = (5.0 \text{ m})\cos 30^\circ = 4.3 \text{ m} \). Thus \( \vec{B} = -(2.5 \text{ m})\hat{i} + (4.3 \text{ m})\hat{j} \).