MATH 114 Final Exam Question 8

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8. Imagine I give you some information about two vectors $\vec{a}$ and $\vec{b}$, that have the same number of components. You know the values of a_1, a_3, a_5, b_2, b_3, b_4, and b_5. But you do not know any of the other values in the vectors. That is:

$$\vec{a} = [a_1, \ ?\ , a_3, \ ?\ , a_5, \ldots, ?]^T$$
$$\vec{b} = [\ ?\ , b_2, b_3, b_4, b_5, \ldots, ?]^T$$

Describe how you can create a vector $\vec{v}$, such that $\vec{v} \neq \vec{0}$ and $\vec{v}$ is orthogonal to both $\vec{a}$ and $\vec{b}$.