Vector Components

1. a) Let $\mathbf{A} = \langle 1, 3 \rangle$ and $\mathbf{B} = \langle 3, 4 \rangle$.

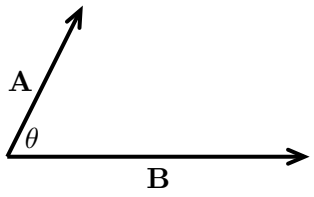
(i) Find the component of $\mathbf{A}$ in the direction of $\mathbf{B}$.

(ii) Find the component of $\mathbf{B}$ in the direction of $\mathbf{A}$.

b) Let $\mathbf{A} = \langle 3, 5, 7 \rangle$ and $\mathbf{B} = \langle 3, 4, 0 \rangle$. Find the component $\mathbf{A}$ in the direction of $\mathbf{B}$.

2. Let $\mathbf{A} = \langle a, 2 \rangle$ and $\mathbf{B} = \langle 1, 3 \rangle$. For what values of a is the component of $\mathbf{A}$ along $\mathbf{B}$ equal to 0? For what a is it negative?

3. For which angle θ is the component of $\mathbf{A}$ in the direction of $\mathbf{B}$ equal to 0.



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