Vector Components

1. a) Let $A = \langle 1, 3 \rangle$ and $B = \langle 3, 4 \rangle$.
   (i) Find the component of $A$ in the direction of $B$.
   (ii) Find the component of $B$ in the direction of $A$.

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

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

3. For which angle $\theta$ is the component of $A$ in the direction of $B$ equal to 0.