1. Find a single vector with *all* of the following properties:

(a) Magnitude 10

(b) Angle of $45°$ with positive x-axis

(c) Angle of $60°$ with positive y-axis

(d) Positive $\hat{\boldsymbol{k}}$-component

2. Find the angle between the diagonal of a cube (connecting opposite corners) and the diagonal of one of its faces (connecting opposite corners of one square face).