1. Find a single vector with all of the following properties:
(a) Magnitude 10
(b) Angle of $45^{\circ}$ with positive $x$-axis
(c) Angle of $60^{\circ}$ 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).
