1. Plot the points $A(2, 0)$ and $B(12, 0)$. A third point $C$ in the first quadrant makes angle $\angle CAB = 60^\circ$, and has the distance $AC = 8$.

(a) Determine the distance $BC$.
(b) Find an equation of the line containing $A$ and $C$.
(c) Find the $y$-coordinate of point $C$.
(d) Determine the $x$-coordinate of point $C$.

2. Plot the points $A(1, 1)$ and $B(3, 1)$. A third point $C$ in the first quadrant lies above the line containing $A$ and $B$. The point $C$ makes angle $\angle CAB = 30^\circ$ and the distance $AC = 6$.

(a) Determine the distance $BC$.
(b) Find the slope-intercept form of the line containing $A$ and $C$.
(c) Determine the perpendicular distance from $C$ to the line containing $A$ and $B$.
(d) Find the $y$-coordinate of point $C$.
(e) Determine the $x$-coordinate of point $C$. 
