

Statics Summer Assignment

Show all work to justify your answer. All answers should be exact (*no decimal answers unless it is specified*).

1. Find values for b such that the triangle has two solutions. $A = 20^\circ$, $a = 7$

2. In the figure below, $a = 8$, $b = 11$, and $d = 12$. Use this information to solve the parallelogram for β . The diagonals of the parallelogram are represented by c and d . Round answer to two decimal places.

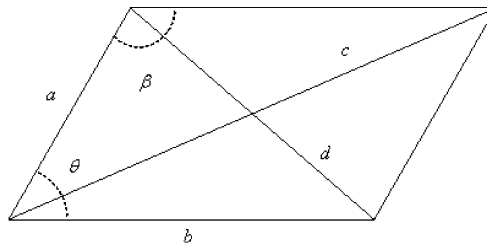
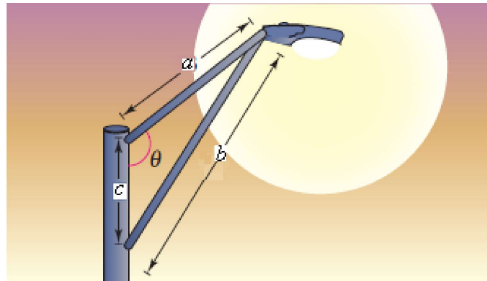


figure not drawn to scale

3. Determine the angle θ in the design of the streetlight shown in the following figure. $a = 4$, $b = 5\frac{1}{2}$, $c = 3$



4. Find the vector \mathbf{v} whose initial and terminal points are given below.

$$(5, 5), (7, 2)$$

5. Given $\mathbf{u} = \langle 6, 12 \rangle$ and $\mathbf{v} = \langle 3, -12 \rangle$, find $2\mathbf{u} + 5\mathbf{v}$.

6. Find the component form of vector $\mathbf{u} + \mathbf{v}$ given $|\mathbf{u}| = 2$ and $|\mathbf{v}| = 3$ and the angles that \mathbf{u} and \mathbf{v} make with the positive x -axis are $\theta_{\mathbf{u}} = 0^\circ$ and $\theta_{\mathbf{v}} = 45^\circ$.