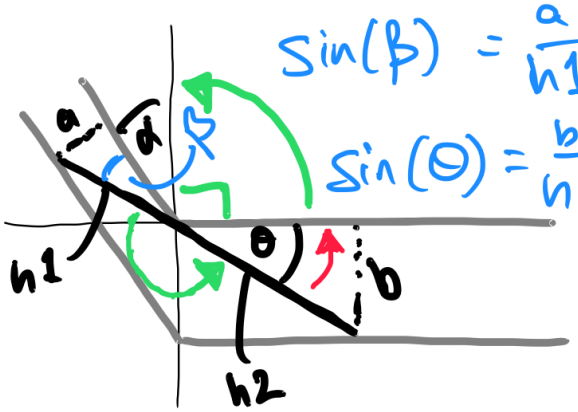
NA HW8 Problem 1 Written Response



$$\sin(\beta) = \frac{a}{h1} \rightarrow h1 = \frac{a}{\sin(\beta)}$$

$$\sin(\theta) = \frac{b}{h2} \rightarrow h2 = \frac{b}{\sin(\theta)}$$

$$\beta = 2\pi - \pi - \theta - \frac{\pi}{2} - \alpha = \frac{\pi}{2} - \alpha - \theta$$

So,

$$L = h1 + h2$$

$$L = \frac{a}{\sin\left(\frac{\pi}{2} - \alpha - \theta\right)} + \frac{b}{\sin(\theta)}$$

$$L = \frac{a}{\cos(\alpha + \theta)} + \frac{b}{\sin(\theta)}$$

$$\frac{dL}{d\theta} = \left[a \tan(\alpha+\theta)\sec(\alpha+\theta)\right] + \left[-b\cot(\theta)\csc(\theta)\right]$$

Yes. Ladder fits.
Max ladder length > 11.0 ft.