Supplemental Homework Exercise #1

Work on this in class Wednesday, December 5. Come with questions about it on Thursday, December 6. Your work is to be turned in Monday, December 10. Do not turn in this worksheet with your work. If you work with someone, (recommended) include their name(s) after you list your name and CM.

A large structure is in the shape of a parallelepiped and it is your job to determine the volume of the structure. The base of the structure is a parallelogram with edge lengths 35 feet and 29 feet. The angles between the edges of the base are $\alpha = \arctan(2)$ and $\pi - \arctan(2)$. The third edge makes an angle of 85° with the 35 foot edge and 78° with the 29 foot edge, but is too tall to measure accurately.

To measure the third edge, you measure its shadow. When the shadow of a yardstick placed perpendicular to the ground is 4 feet long, the shadow is perpendicular to the 35 foot edge. At this time, the shadow of the third edge is 60 feet long. What is the volume of the structure?