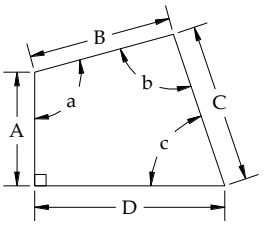
Mth 86 Lab 5 *Franz Helfenstein* **NAME**

Perform your work on separate paper as necessary. Write your answers on this page. Answers must be **circled** and clearly **legible**. Use **two decimal accuracy** for approximate values. **Units** required. 10 pts

1) A = 435, B = 559, a = 107°, b = 94°. Find C, D and c.

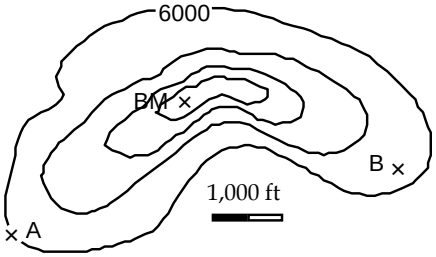


c = _____

C = _____

D = _____

2) The summit BM is at 7,882'. Find the average grade from A to the summit. What is that grade as an angle?

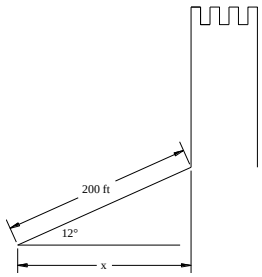


500' contour intervals

% grade = _____

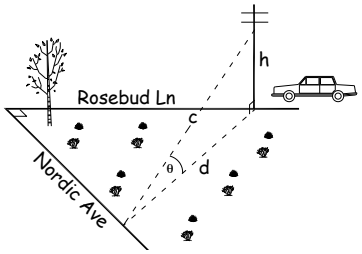
θ = _____

3) You are given the job to dig a tunnel underneath a castle on a hill. The hill slopes at 12°. You begin 200 feet down the hill from the edge of the wall. How far will you dig horizontally before you are just under the edge of the castle wall?



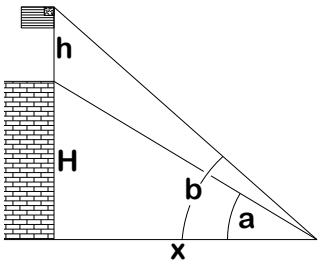
x = _____

4) A utility pole is located on Rosebud Ln, 200' from the corner of Nordic and Rosebud. A cable is attached 40' up the pole and anchored on Nordic, 180' from the corner. What angle does the cable make with the ground?



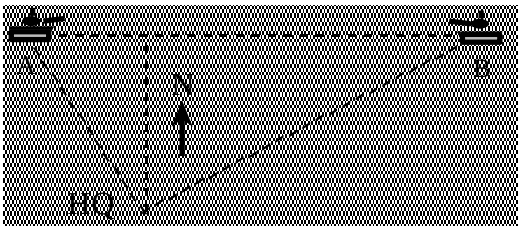
θ = _____

5) x = 150 m, a = 66.8°, b = 68.7°. Find h.



h = _____

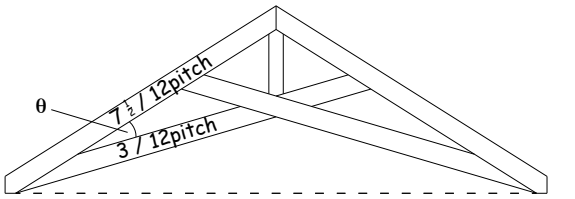
6) Tank A is 4 mi from HQ at bearing N 33° W. Tank B is 8 miles from HQ and due East from Tank A. How far apart are the tanks?



Distance = _____

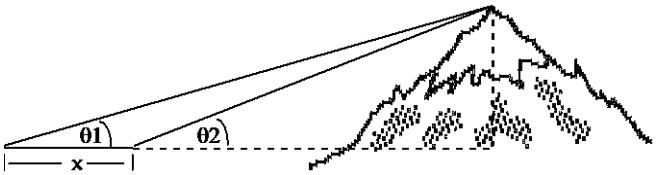
7) What is the angle between the roof rafter and the ceiling rafter?

θ = _____



8) Find the height of the mountain:

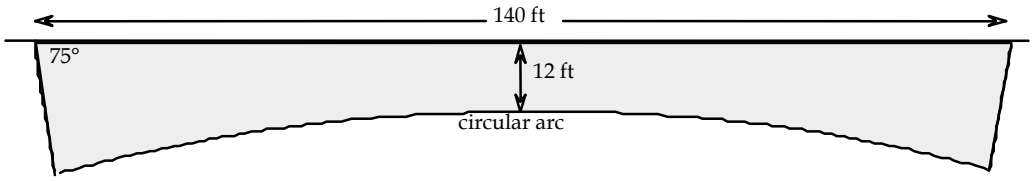
$\theta_1 = 31° 15'$ $\theta_2 = 32° 30'$ x = 1,542'



H = _____

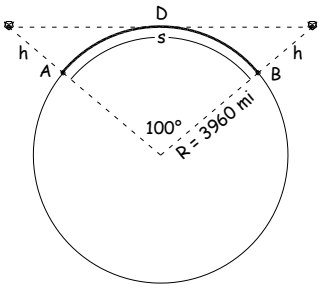
9) Find the area (sq-ft) of the bridge's cross-section.

A = _____



10) Satellite A is launched from station A and satellite B is launched from station B. The stations are 100° apart on the equator. If both satellites are at the same altitude, what would their minimum height above the surface be when they first have direct line of sight communication ability? What is the distance between the satellites?

h = _____ D = _____



BONUS 1

How far apart are the two stations? s = _____