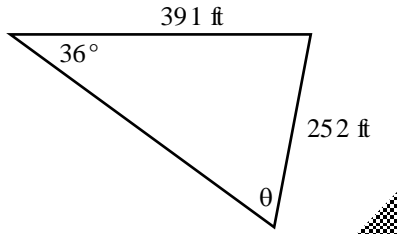


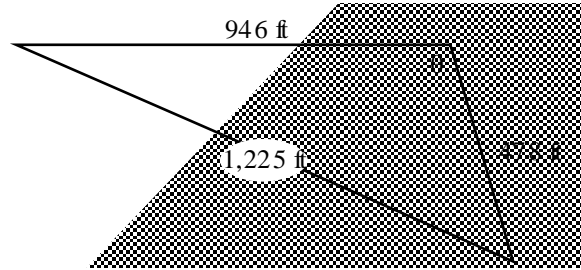
Answers must be clearly **legible**, **simplified** and **boxed** or **circled**. Unless otherwise stated write answer as an **exact** integer or rational or use **two** decimal accuracy. **Units** required. 20 pts

1) Find  $\theta$ .



$\theta =$  \_\_\_\_\_

2) Find  $\theta$ .



$\theta =$  \_\_\_\_\_

3) Find  $x$ .



$x =$  \_\_\_\_\_

4) Find  $x$ .



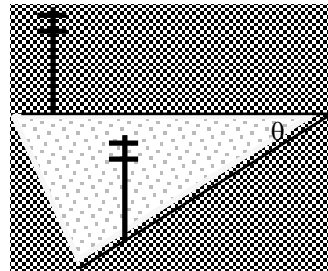
$x =$  \_\_\_\_\_

5) A pole is set vertically on a hill which slopes at 25%. Find the length of the guy-wire when it is attached 18 ft up the pole at an angle of  $60^\circ$ .



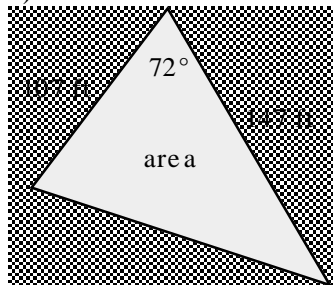
wire length = \_\_\_\_\_

6) Two streets meet at  $\theta = 70^\circ$ . Find the distance between the telephone poles given that one is 82 ft from the corner and the other is 132 ft from the corner.



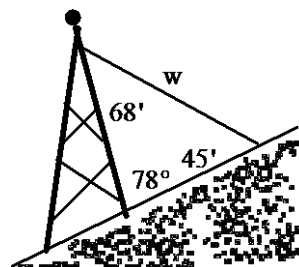
distance = \_\_\_\_\_

7) Find the area.



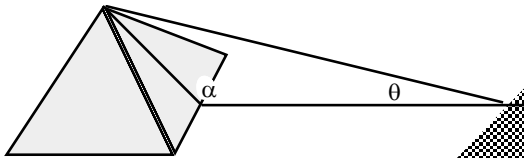
area = \_\_\_\_\_

8) Find  $w$ , the length of the guy-wire.



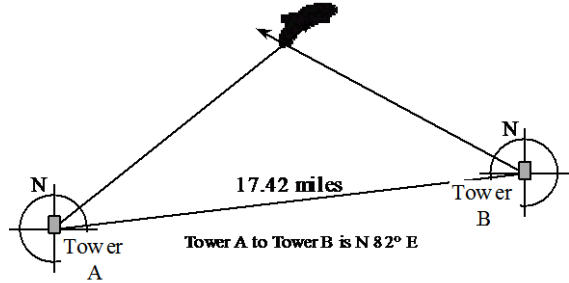
$w =$  \_\_\_\_\_

9) Achmed measures the angle to the face of this pyramid at  $\alpha = 134^\circ$ . He then walks 422 ft away and measures an angle to the top at  $\theta = 12^\circ$ . How tall is the pyramid?



Vertical Height = \_\_\_\_\_

10) Find the (x, y) location of the fire when tower A is the origin.



Tower A: Fire is sighted at  $N 53^\circ E$   
 Tower B: Fire is sighted at  $N 58^\circ W$

(x, y) = \_\_\_\_\_

**BONUS**

Use your calculator to solve for all x where  $0 \leq x \leq \pi/2$ . Give approximate answers to 3 decimals. i.e. 0.xxx

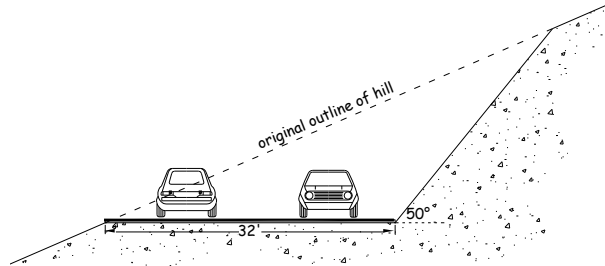
$2\sin^2(x) \cos(x) - \cos(x) = 0$       Note: On the TI,  $\sin^2(x) = (\sin(x))^2$

x = \_\_\_\_\_

**BONUS**

A hill slopes at 50%. A road is to be cut into the hill as shown. If the cut is 320' long, how many cubic yards of dirt must be removed?

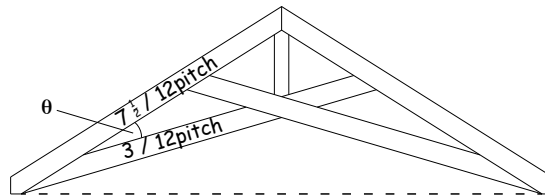
V = \_\_\_\_\_



**BONUS**

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

$\theta =$  \_\_\_\_\_



**BONUS**

Satellite A is launched from station A and satellite B is launched from station B. The stations are  $100^\circ$  apart on the equator. If both are at the same altitude, what would their minimum height above the surface be so that they have direct line of sight communication ability? What is the distance between the satellites? How far apart are the two stations?

h = \_\_\_\_\_

D = \_\_\_\_\_

s = \_\_\_\_\_

