

Unit #7: Extended Trigonometry

MA3A6 d

Find the indicated part of  $\triangle ABC$  to three significant digits or to the nearest tenth of a degree. If there are two solutions, give both.

1.  $a = 14, \angle A = 25^\circ, \angle B = 75^\circ, b =$  \_\_\_\_\_ 2.  $c = 12, \angle A = 42^\circ, \angle C = 69^\circ, a =$  \_\_\_\_\_

3.  $b = 3.40, \angle A = 110^\circ, \angle C = 50^\circ, a =$  \_\_\_\_\_ 4.  $a = 2.60, \angle B = 60^\circ, \angle C = 100^\circ, c =$  \_\_\_\_\_

5.  $c = 35, \angle A = 38^\circ, \angle C = 102^\circ, b =$  \_\_\_\_\_ 6.  $b = 130, \angle B = 95^\circ, \angle C = 35^\circ, a =$  \_\_\_\_\_

7.  $a = 4, b = 3, \angle A = 40^\circ, \angle B =$  \_\_\_\_\_ 8.  $a = 4.5, b = 6.0, \angle B = 35^\circ, \angle A =$  \_\_\_\_\_

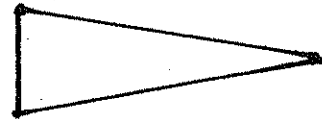
9.  $a = 4.0, c = 6.4, \angle C = 125^\circ, \angle B =$  \_\_\_\_\_ 10.  $a = 18, b = 12, \angle A = 110^\circ, \angle C =$  \_\_\_\_\_

11.  $a = 5, c = 7, \angle A = 42^\circ, \angle C =$  \_\_\_\_\_ 12.  $b = 15, c = 11, \angle C = 40^\circ, \angle B =$  \_\_\_\_\_

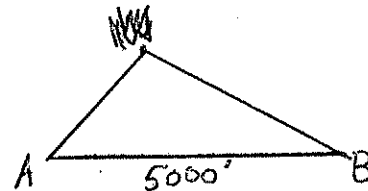
Solve the following problems. Give answers to three significant digits.

- Two angles of a triangle measure  $32^\circ$  and  $53^\circ$ . The longest side is 55 cm. Find the length of the *shortest side*.
- Two angles of a triangle measure  $75^\circ$  and  $51^\circ$ . The side opposite the  $75^\circ$  angle is 25 in. How long is the *shortest side*?
- How long is the base of an isosceles triangle if each leg is 27 cm and each base angles measures  $23^\circ$ ?

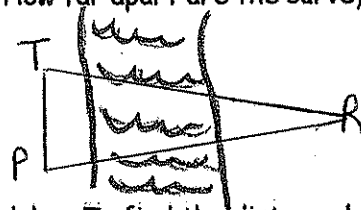
- A college football pennant is in the shape of an isosceles triangle. The base is 16 in long. The sides meet at an angle of  $35^\circ$ . How long are the sides?



- A fire is sighted from two ranger stations that are 5000 m apart. The angles of observation to the fire measure  $52^\circ$  from one station and  $41^\circ$  from the other station. Find the distance along the line of sight to the fire from the closer of the two stations.



- Two surveyors are on opposite sides of a swamp. To find the distance between them, one surveyor locates a point  $T$  that is 180 m from her location at point  $P$ . The angles of sight from  $T$  to the other surveyor's position,  $R$ , measure  $72^\circ$  for  $\angle RPT$  and  $63^\circ$  for  $\angle PTR$ . How far apart are the surveyors?



- Two markers are located at points  $A$  and  $B$  on opposite sides of a lake. To find the distance between the markers, a surveyor laid off a base line,  $\overline{AC}$ , 25 m long and found that  $\angle BAC = 85^\circ$  and  $\angle BCA = 66^\circ$ . Find  $AB$ .

