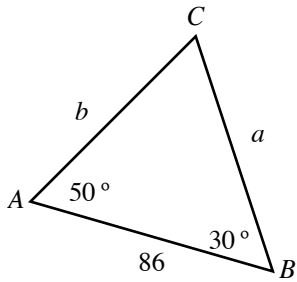


Trigonometry Assignment #5

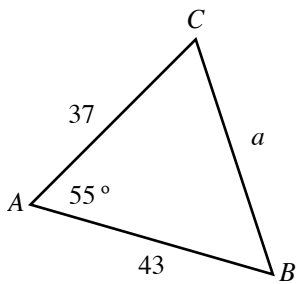
Covers up to Trigonometry 17: The Unit Circle with Radians

1. Using a calculator, find the missing sides (to at least 3 decimal places of accuracy)

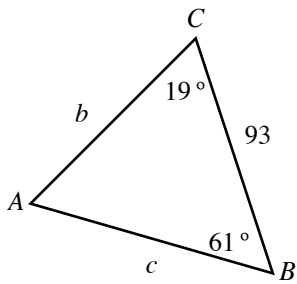
a.



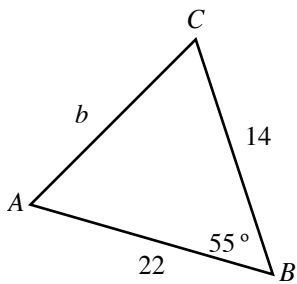
b.



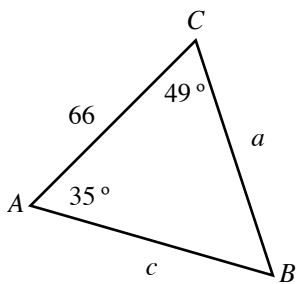
c.



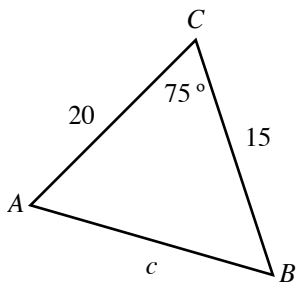
d.



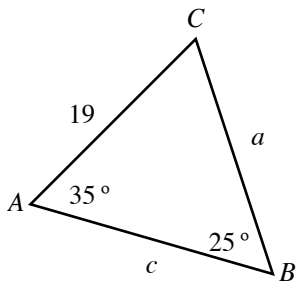
e.



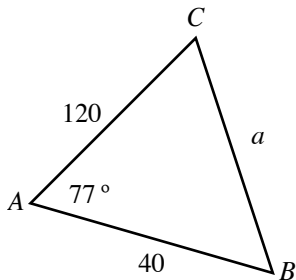
f.



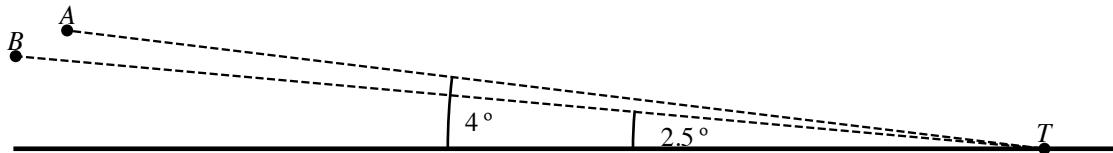
g.



h.



2. A surveyor standing 50 meters from the base of a building measures the angle to the top of the building and finds it to be 35° . The surveyor then measures the angle to the top of the radio tower, which is positioned on the top of the near edge of the building, and finds that it is 43° .
- Using the Law of Cosines, determine how tall the radio tower is.
 - In the last assignment (Assignment #4), you solved this problem using right angle trigonometry. Compare and contrast the two approaches.
3. Two airplanes are flying east towards a control tower, at point T in the diagram below. One airplane, at point A, has an elevation of 23,000 feet; the other, at point B, has an elevation of 18,000 feet. From T, the angle of elevation of the airplane at A is 4° , and the angle of elevation of the airplane at B is 2.5° . How far apart (in miles) are the airplanes? (There are 5280 feet in a mile.)



4. Yosemite Falls in California has three sections; the Upper Fall, Middle Cascade, and the lower Fall. From a bridge 0.5 miles away from the falls, the angles of elevation to the top and bottom of the Upper Yosemite Fall are 44.72° and 23.81° respectively. How high is the total series of all three falls? Determine the height of any of the three falls individually if you can.
5. Solve $\cos \theta = \frac{-1}{\sqrt{2}}$. Write your answer using radians. (Hint: There are an infinite number of answers).