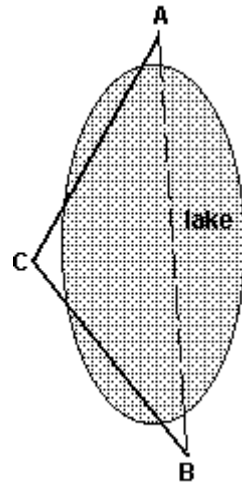


Math 120 – Teamwork # 6

You must show all work for credit. Please box your answers.

1. A surveyor wishes to find the distance between two inaccessible points **A** and **B** on opposite sides of a lake as shown. While standing at point **C**, he finds that **AC** = 259 meters, **BC** = 423 meters, and angle **ACB** measures $132^{\circ}4'13''$. Find the distance across the lake from **A** to **B**. Show your work.



2. A woman on the top of a 448-foot-high building spots a small plane. As she views the plane, its angle of elevation is 62° . At the same instant a man at the ground-level entrance to the building sees the plane and notes that its angle of elevation is 65° . (a) Use the Law of Sines to find how far the woman is from the plane, (b) use the Law of Cosines to find how far the man is from the plane, and (c) use Right-Triangle Trigonometry to find the altitude of the plane.

3. The ArtsPort Entertainment Triangle of Bridgeport, CT, is an area of Bridgeport famous for its playhouses and theatres. The smallest leg of the triangle is 1950 ft, the SW angle is 28° , and the SE angle is 64° .

The ArtsPort Entertainment Triangle of Bridgeport



- a. First find the bottom leg of the triangle and then use the area formula $A = \frac{1}{2} ab \sin C$ to find the area of the ArtsPort Triangle. Include units!
- b. Now find all three sides of the triangle and then use Heron's formula. Did you get the same result?

4. In $\triangle SML$, $SM = 7$ and $ML = 9$. If $\angle M$ is exactly twice as large as $\angle S$, find SL .
[Hint: use both the Law of Cosines and the Law of Sines, and then use a graphing utility to solve the equation.]