Simplify all answers and show your work!

1. Given $c = 18$ and $B = 29^\circ$, find $a$.

2. Given $a = 13$ and $A = 61^\circ 38'$, find $b$.

3. From a boat on the river below a dam, the angle of elevation to the top of the dam is $23.85^\circ$. If the dam is 1984 feet above the level of the river, how far is the boat from the base of the dam?

4. What is the angle of elevation of the sun from the ground when a 75-ft flag pole casts a 19-ft shadow?

5. Find the measures of two angles, one positive and one negative, coterminal with $149^\circ$.

6. Find the measure between $0^\circ$ and $360^\circ$ coterminally with:
   a) $1569^\circ$
   b) $-542^\circ$

   Find the following:
   7. sec $(-524^\circ)$
   8. cot $(974^\circ)$

9. List two angles between $0^\circ$ and $360^\circ$ which have a sine value of 0.5929.

10. List two angles between $0^\circ$ and $360^\circ$ which have a cosine value of -0.9524.

11. Given oblique triangle $ABC$ where $\angle B = 17.1^\circ$, $b = 5.23$, and $a = 22.1$, find measure(s) for $\angle A$, if possible.

12. Given oblique triangle $ABC$ where $\angle B = 16.4^\circ$, $b = 7.49$, and $a = 13.26$, find measure(s) for $\angle A$, if possible.
13. Two tracking stations are on the equator 145 miles apart. A weather balloon is located on a bearing of N 37°E from the western station and on a bearing of N16°E from the eastern station. How far is the balloon from the western station?

14. A guy wire to a tower makes a 68° angle with level ground. At a point 37 ft farther from the tower than the wire but on the same side as the base of the wire, the angle of elevation to the top of the tower is 38°. Find the length of the wire.

15. Given oblique triangle ABC where a = 8.8, b = 13.4, and c = 16.7, find measure for ∠B, if possible.

16. Los Angeles and Las Vegas are approximately 200 miles apart. A pilot traveling from Los Angeles to Las Vegas is 80 miles from Los Angeles and finds that she is 6.3° off course relative to her start in Los Angeles. How far is she from Las Vegas at this time?