Math 3: Unit 9 Day 4 *Law of Cosines*
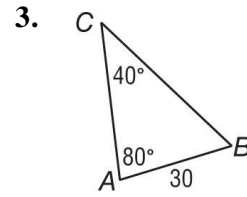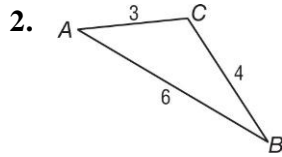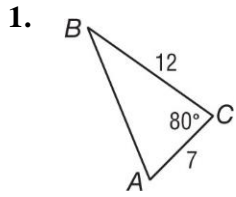
Determine whether each triangle should be solved by beginning with the Law of *Sines* or Law of *Cosines*.

1.

2.

3.

4. $a = 16$, $b = 20$, $C = 54°$

5. $A = 37°$, $a = 20$, $b = 18$

6. $a = 8$, $b = 6$, $c = 9$

Find the missing side or angle, as requested. Round to the nearest tenth.

7. $C = 43.5°$, $a = 8$, $b = 6$, $c = ?$

8. $A = 46.3°$, $b = 30$, $c = 35$, $a = ?$

9. $a = 4$, $b = 5$, $c = 8$, $\angle C = ?$

10. $a = 11$, $b = 19$, $c = 14$, $\angle B = ?$

**Solve the triangle (Find all missing sides and angles).**

11. $C = 27°$, $a = 5$, $b = 9$

12. $a = 4$, $b = 7$, $c = 6$

13. Two radar stations 2.4 miles apart are tracking an airplane. The straight-line distance between Station A and the plane is 7.4 miles. The straight-line distance between Station B and the plane is 6.9 miles. What is the angle of elevation from Station A to the plane? Round to the nearest degree.


7.4 mi
6.9 mi
A
B
2.4 mi
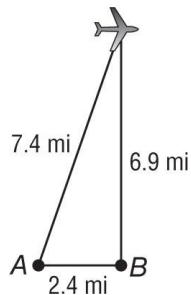
14. The Perth County pool has a lifeguard station in both the deep water and shallow water sections of the pool. The distance between each station and the bottom of the slide is known, but the manager would like to calculate more information about the pool setup.


Slide
Deep Water Station
18 yards
38°
12 yards
Shallow Water Station
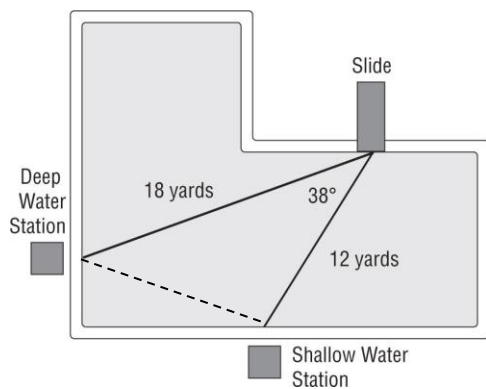
a. When the lifeguards switch positions, the lifeguard at the deep water station swims to the shallow water station. How far does the lifeguard swim?

b. If the lifeguard at the deep water station is directly facing the bottom of the slide, what angle does she need to turn in order to face the lifeguard at the shallow water station?
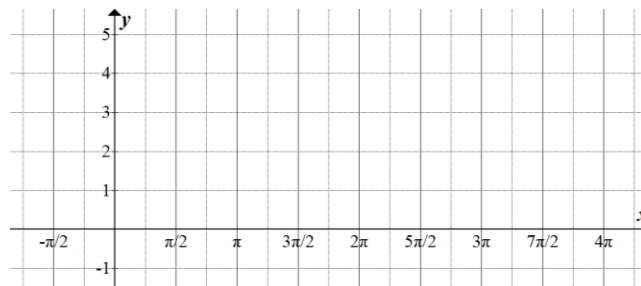
Graph each function.

15. $f(x) = 3\cos x - 2$
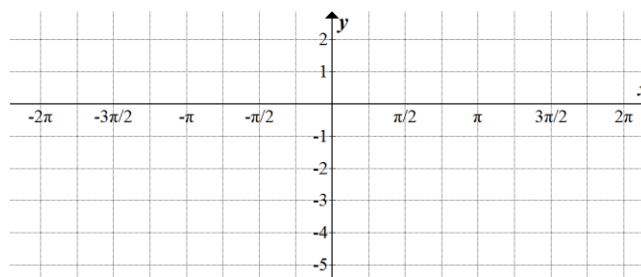
16. $f(x) = -\cos x + 1$
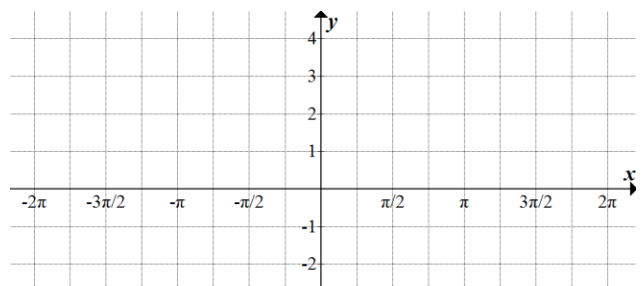
17. $f(x) = \sin 2x + 3$

18. Write the equation from the graph.