

Classroom Voting Questions: Precalculus

The Law of Sines and the Law of Cosines

1. Given a triangle with angles A , B , and C and opposite sides a , b , and c , find the measurements of the remaining angle and sides assuming that $B = 30^\circ$, $C = 100^\circ$ and $b = 20$ feet.
 - (a) $A = 50^\circ$, $a \approx 39.39$ feet, $c \approx 30.64$ feet
 - (b) $A = 50^\circ$, $a \approx 10.50$ feet, $c \approx 20.26$ feet
 - (c) $A = 50^\circ$, $a \approx 30.64$ feet, $c \approx 39.39$ feet
 - (d) $A = 230^\circ$, $a \approx 30.64$ feet, $c \approx 39.39$ feet
2. A big pine tree has grown so that it is tilted 3° from vertical toward the sun. When its shadow is 20 feet long, the angle of elevation from the tip of its shadow to the top of the tree is 60° . Approximately how tall is the tree (i.e. what is its length)?
 - (a) 32 feet
 - (b) 38 feet
 - (c) 44 feet
 - (d) 331 feet
3. True or False: Two angles and a side determine a unique triangle.
 - (a) True, and I am very confident.
 - (b) True, but I am not very confident.
 - (c) False, but I am not very confident.
 - (d) False, and I am very confident.
4. True or False: Given the measurements of any two angles and one side of an oblique triangle, the triangle can be completely solved using the law of sines.
 - (a) True, and I am very confident.
 - (b) True, but I am not very confident.
 - (c) False, but I am not very confident.
 - (d) False, and I am very confident.

5. True or False: Given the measurements of any two sides and an angle, the law of sines can be used to solve any oblique triangle.
- (a) True, and I am very confident.
 - (b) True, but I am not very confident.
 - (c) False, but I am not very confident.
 - (d) False, and I am very confident.
6. Suppose you are to construct a triangle given the lengths of two sides a and b and the measurement of opposite angle A . How many possible triangles can you construct if A is acute?
- (a) none
 - (b) one
 - (c) two
 - (d) two of the above
 - (e) all of the above
7. Suppose you are to construct a triangle given the lengths of two sides a and b and the measurement of opposite angle A . How many possible triangles can you construct if A is obtuse?
- (a) none
 - (b) one
 - (c) two
 - (d) two of the above
 - (e) all of the above
8. Given an oblique triangle with sides $a = 6$ and $b = 8$, and opposite angle $A = 30^\circ$, find the measurement of opposite angle B .
- (a) $B \approx 42^\circ$
 - (b) $B \approx 138^\circ$
 - (c) either (a) or (b)
 - (d) There is no solution.

9. Given an oblique triangle with sides $a = 3$ and $b = 8$, and opposite angle $A = 30^\circ$, find the measurement of opposite angle B .
- (a) $B \approx 11^\circ$
 - (b) $B \approx 42^\circ$
 - (c) either (a) or (b)
 - (d) There is no solution.
10. A person leaves his house and walks 2 miles west and then 4 miles northwest. Approximately how far is he from home?
- (a) 31.3 miles
 - (b) 2.95 miles
 - (c) 6 miles
 - (d) 5.6 miles
11. Given a triangle with sides $a = 6$, $b = 8$, and $c = 11$, find opposite angles A , B , and C .
- (a) $A \approx 32^\circ$, $B \approx 103^\circ$, $C \approx 45^\circ$
 - (b) $A \approx 45^\circ$, $B \approx 32^\circ$, $C \approx 103^\circ$
 - (c) $A \approx 32^\circ$, $B \approx 45^\circ$, $C \approx 103^\circ$
 - (d) There is no solution.
12. Triangle ABC has sides of length a , b , and c , and angles of measure α , β , and γ opposite those sides, respectively. If $\alpha = 42^\circ$, $\gamma = 59^\circ$, and $b = 45$, find a .
- (a) $\frac{45 \sin 42^\circ}{\sin 79^\circ}$
 - (b) $\frac{45 \sin 42^\circ}{\sin 59^\circ}$
 - (c) $\frac{45 \sin 79^\circ}{\sin 42^\circ}$
 - (d) $\frac{45 \sin 59^\circ}{\sin 42^\circ}$
13. Alan at position A spots a deer bearing $S43^\circ E$. Bob at position B , 700 meters due east of position A , spots the deer bearing $S65^\circ W$. How far from Alan is the deer?

- (a) $\frac{700 \sin 43^\circ}{\sin 72^\circ}$ meters
- (b) $\frac{700 \sin 65^\circ}{\sin 72^\circ}$ meters
- (c) $\frac{700 \sin 47^\circ}{\sin 108^\circ}$ meters
- (d) $\frac{700 \sin 25^\circ}{\sin 108^\circ}$ meters

14. Triangle ABC has sides of length a , b , and c , and angles of measure α , β , and γ opposite those sides, respectively. If $\alpha = 73^\circ$, $b = 7.0$, and $c = 3.0$, find a .

- (a) $58 - 42 \cos 73^\circ$
- (b) $\sqrt{58 - 42 \cos 73^\circ}$
- (c) $58 - 21 \cos 73^\circ$
- (d) $\sqrt{58 - 21 \cos 73^\circ}$

15. Triangle ABC has sides of length a , b , and c , and angles of measure α , β , and γ opposite those sides, respectively. If $a = 5$, $b = 4$, and $c = 2$, find α .

- (a) $\cos\left(\frac{5}{16}\right)$
- (b) $\cos^{-1}\left(\frac{5}{16}\right)$
- (c) $\cos\left(-\frac{5}{16}\right)$
- (d) $\cos^{-1}\left(-\frac{5}{16}\right)$