

Review for Midterm Exam**Triangle Trig – Right Triangles & Laws of Sines and Cosines**

1. Solve triangle ABC if angle B is a right angle, side a = 11.1 and side b = 14.7.
2. Solve triangle ABC if angle A = 42.3° , side b = 6.1 and side c = 8.3.
3. Find the area of triangle ABC in question #2.
4. Solve triangle ABC if angle A = 82.1° , angle B = 38.7° and side a = 12.9.
5. Solve triangle ABC if side a = 9, side b = 11 and side c = 14.
6. Find the area of triangle ABC in question #5.
7. Find the angle of elevation to the top of a 10.3 foot tree that is casting a 28.9 foot shadow.
8. A ship leaves port and sails with a bearing of S 42° W at a speed of 23 mph. After 5 hours, how far south and how far west is the ship from the port?
9. At Pope High School, there is a flagpole mounted on the roof. From a point 200 feet in front of Pope, the angles of elevation to the base of the flagpole on the roof and to the top of the flagpole on the roof are 24° and 37° respectively. Find the height of the flagpole.
10. From the top of a 55 foot tall lighthouse, a Coast Guard officer sights a boat in difficulty. The angle of depression to the boat is 6° . How far is the boat from the shoreline?
11. A 70 foot line is attached to a kite. When the kite has pulled the line tight, the angle of elevation of the kite is 56° . Find the height of the kite.
12. A plane is 250 miles north and 175 miles east of the airport. What bearing should the pilot follow if he wants to fly directly to the airport?

Solve the triangles using the Law of Sines, Law of Cosines or both.

13. a = 8.5 b = 12 A = 42°
14. C = 120° a = 4 b = 6
15. a = 55 b = 34 c = 70
16. C = 15° a = 6.25 b = 2.15

Use a calculator to evaluate each function. Round your answers to 4 decimal places.

17. $\sin 25^\circ$
18. $\cos 65^\circ$
19. $\cot 71.5^\circ$
20. $\sec 42^\circ 12'$

21. $\cos 8^{\circ}50'25''$

22. $\tan \frac{\pi}{16}$

23. $\csc 1.25$

24. $\csc 0$

Find the value of θ in degrees. Round to the nearest hundredth.

25. $\sin \theta = 0.8191$

26. $\cos \theta = 0.9848$

27. $\tan \theta = 1.1920$

28. $\sec \theta = 1.4123$

Find the value of θ in $D^{\circ}M'$. Round to the nearest minute.

29. $\cos \theta = 0.4223$

30. $\tan \theta = 1.5002$

31. $\csc \theta = 1.5555$

32. $\cot \theta = 2.1234$

Answers

1) $A = 49^{\circ}, C = 41^{\circ}, c = 9.6$

2) $B = 51.8^{\circ}, C = 85.9^{\circ}, a = 5.6$

3) 17.0 square units

4) $C = 59.2^{\circ}, b = 8.1, c = 11.2$

5) option 1: $A = 39.9^{\circ}, B = 51.8^{\circ}, C = 88.3^{\circ}$

6) 49.5 square units

option 2: $A = 40^{\circ}, B = 50.8^{\circ}, C = 89.2^{\circ}$

7) 19.6°

8) south 85.5 miles, west 77 miles

9) 61.7 feet

10) 523.3 feet

11) 58 feet

12) $W 55^{\circ} S$ or $S 35^{\circ} W$

13) $B = 70.8^{\circ}, C = 67.2^{\circ}, c = 11.7$

14) options 1: $c = 8.7, A = 23.5^{\circ}, B = 36.5^{\circ}$

AND $B = 109.2^{\circ}, C = 28.8^{\circ}, c = 6.1$

option 2: $c = 8.7, A = 23.3^{\circ}, B = 36.7^{\circ}$

15) $C = 101.1^{\circ}, A = 50.4, B = 28.5^{\circ}$

16) $A = 157.4^{\circ}, B = 7.6^{\circ}, c = 4.2$

17) 0.4226

18) 0.4226

19) 0.3346

20) 1.3499

21) 0.9881

22) 0.1989

23) 1.0538

24) undefined

25) 54.99°

26) 10°

27) 50.01°

28) 44.92°

29) $65^{\circ}1'$

30) $56^{\circ}19'$

31) $40^{\circ}0'$

32) $25^{\circ}13'$