7.2 Law of Cosines & Area of Triangles

2023-2024

Name _____ Date _____ Period _____

Solve each triangle. Round to the nearest tenth.

1.

B

$a = 3.1$

c

$121.3°$

C $b = 2.9$

A

2.

B

$c = 5.2$

$\alpha = 6.1$

A

$b = 10.3$

C
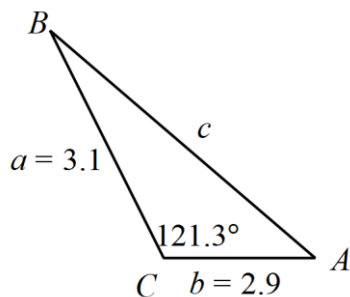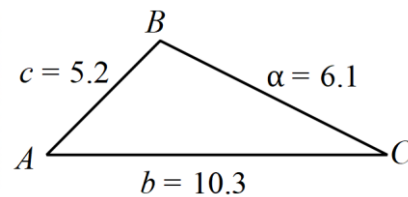
Solve each triangle with the given information. Round to the nearest tenth.

3. $a = 6.8, c = 2.4, \beta = 10.5°$

4. $a = 18.5, b = 12.2, c = 8.1$

5. $a = 10.3, c = 8.4, \beta = 88°$

6. $a = 6.3, b = 7.1, c = 6.8$

7. $a = 7.2, \beta = 25°, \gamma = 35°$

Determine the number of triangles with the given parts. The sum of the 2 shorter sides must be greater than the longest side to be a triangle.

8. $a = 3, b = 4, c = 7$

9. $a = 5, b = 6, c = 9$

Find the area of each triangle with the given parts. Round to the nearest tenth.
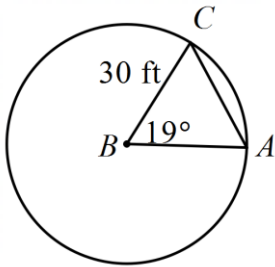
10. $a = 12.9, b = 6.4, \gamma = 13.7°$

11. $\alpha = 42.3°, \beta = 62.1°, c = 14.7$

12. $\alpha = 56.3°$, $\beta = 41.2°$, $a = 9.8$ 13. $\gamma = 74.3°$, $\beta = 25.6°$, $b = 17.3$

Solve each problem. Draw diagrams if necessary. Show work!

14. What is the length of a chord AC intercepted by a central angle of 19° in a circle of radius 30 feet? Round to the nearest hundredth of a foot. (Find AC)

15. A triangular piece of glass has sides of lengths 13 in., 18 in., and 9 in. Find the area of the triangle without using Heron's formula. Round to the nearest tenth.

16. An airplane leaves an airport and flies due west 150 miles and then 230 miles in the direction S39.67°W. How far is the airport from the plane's final destination to the nearest tenth of a mile?

17. A ship travels 98 km on a bearing of 38° and then travels on a bearing of 128° for 169 km. Find the distance from the starting point to the end of the trip to the nearest tenth pf a kilometer.

18. To find the distance between two small towns, Moroni and Wales, an electronic distance measuring (EDM) instrument is placed on a hill from which both towns are visible. The EDM measured the distance to Moroni as 4.1 miles and the distance to Wales at 4.5 miles. The angle between the two lines of sight is 37°. What is the distance, to the nearest tenth of a mile, between the two towns?

19. A parallelogram has sides of lengths 36.4 cm and 21.5 cm. If the shorter diagonal has a length of 38.9 cm, what is the measure of the angle opposite this diagonal to the nearest tenth of a centimeter?

Find all of the real zeros of the function, finding exact values whenever possible. Identify each zero as rational or irrational.

20. $f(x) = 2x^3 - 3x^2 - 4x + 6$

21. $f(x) = x^2 - 36$

22. $f(x) = -(x-2)^3(x+1)$

Zeros	Multiplicity	Touch/Cross

$\lim_{x \to \infty} f(x) =$

$\lim_{x \to -\infty} f(x) =$