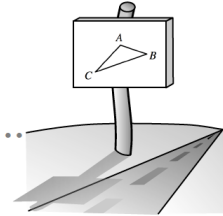


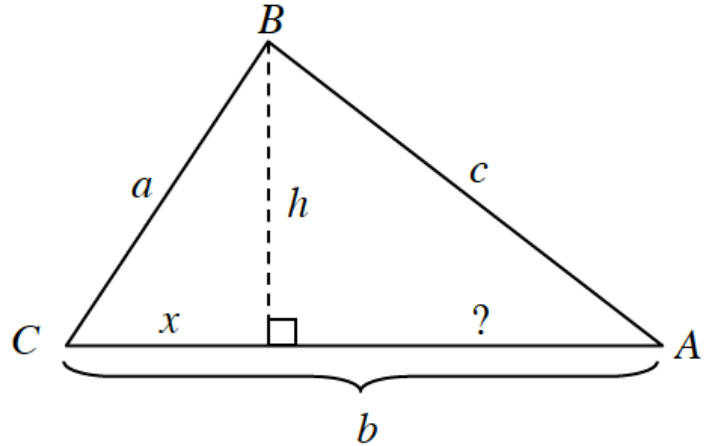
6.1.2 How can I solve a triangle with SSS or SAS?

The Law of Cosines



26 LAW OF COSINES PROOF

The Law of Sines only helps you efficiently solve triangles for certain sets of given information. For other triangles, the Law of Cosines is used, which you may remember from prior math classes. The following problem guides you through the derivation of this useful formula. Assume a , b , and C are given values.



a. Label the missing segment using the given information.

b. Use the Pythagorean Theorem to write a set of equations for the two right triangles that are created by the height.

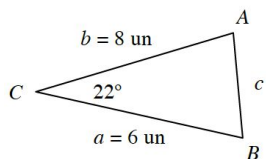
c. Use your set of equations from part (b) to create a single equation without h .

d. Write an equation relating C , x , and a that is in $x =$ form.

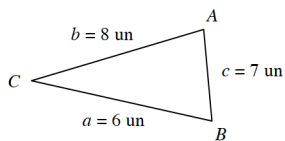
e. Combine your answers from parts (c) and (d) to write an equation without x that is in $c^2 =$ form.

#27 In Lesson 6.1.1, you were not able to solve the following triangles by using the Law of Sines. If possible, solve these triangles by using the Law of Cosines. If you cannot solve a triangle, explain why you cannot.

a.

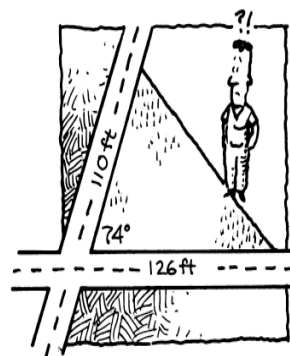


b.



#28 Two streets bounding your triangular lot make an angle of 74° . The lengths of the two sides of the lot on these streets are 126 feet and 110 feet. You want to build a fence on the third side, but have only 150 feet of fencing on hand.

a. Do you have enough fencing? Justify your answer.



b. What are the measures of the other two angles of the lot?

c. The city has zoned the property so that any residence must have a square footage at least one-third the area of the lot itself. You plan to build a 2300 ft² home. Will the city approve your plans? Why or why not