

Section 3.2 Law of Cosines

Objective: In this lesson you learned how to use the Law of Cosines to solve oblique triangles and to use Heron's Formula to find the area of a triangle.

Course Number

Instructor

Date

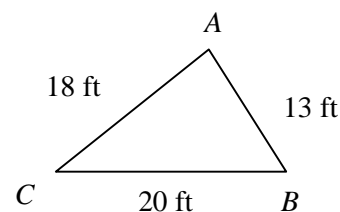
I. Introduction (Pages 271–272)

State the **Law of Cosines**.

What you should learn

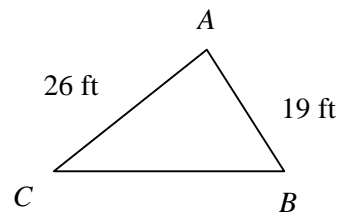
How to use the Law of Cosines to solve oblique triangles (SSS or SAS)

Example 1: Using the triangle shown at the right, find angle A .



When given the lengths of all three sides of a triangle and asked to find all three angles, which angle should be found first? Why?

Example 2: In the triangle shown at the right, if $A = 62^\circ$, find the length of side a .



II. Applications of the Law of Cosines (Page 273)

Describe a real-life situation in which the Law of Cosines could be used.

What you should learn

How to use the Law of Cosines to model and solve real-life problems

III. Heron's Area Formula (Page 274)

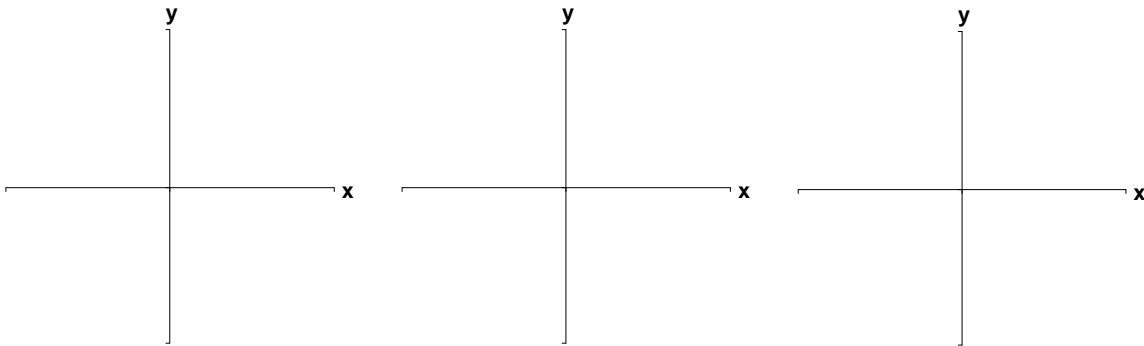
Heron's Area Formula states that given any triangle with sides of length a , b , and c , the area of the triangle is:

$$\text{Area} = \sqrt{\frac{a+b+c}{2} \left(\frac{a+b+c}{2} - a \right) \left(\frac{a+b+c}{2} - b \right) \left(\frac{a+b+c}{2} - c \right)}$$

where $s = \frac{a+b+c}{2}$.

Example 3: Find the area of a triangle having sides of length $a = 14$ cm, $b = 21$ cm, and $c = 27$ cm.

What you should learn
How to use Heron's Area Formula to find the area of a triangle

Additional notes**Homework Assignment**

Page(s)

Exercises