5.6 The Law of Cosines

Target 6D: Use Law of Sines and Law of Cosines to solve triangles

Review Prior Concepts

1. Given $\angle A = 37°$, $a = 5$, $b = 4$, find the value of $\angle C$.

2. Given $\angle A = 37°$, $a = 6$, $b = 10$, find the value of $\angle C$.

Law of Cosines

$$c^2 = a^2 + b^2 - 2ab \cos C$$

OR

OR

➲With what given conditions can Law of Cosines be used?

Examples

1) Solve the triangle given $\angle C = 20°$, $a = 11$cm, and $b = 5$cm.

2) Solve the triangle given $a = 7$, $b = 8$, and $c = 10$.

Applications

1) Two ships leave port at 4 p.m. One is headed at a bearing of N38°E and is traveling at 11.5 miles per hour. The other is traveling 13 miles per hour at a bearing of S47°E. How far apart are they when dinner is served at 6 p.m.?
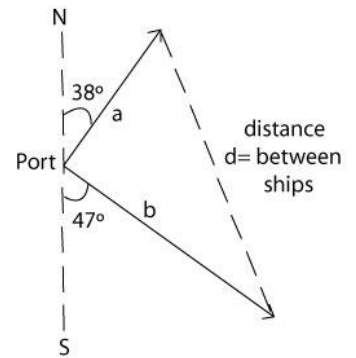
2) On a baseball field, the pitcher's mound is 60.5 feet from home plate. During practice, a batter hits a ball 261 feet at an angle of 31° to the right of the pitcher's mound. The right fielder catches the ball and throws it to the pitcher. How far does the right fielder throw the ball?

More Practice

Law of Cosines

https://www.mathsisfun.com/algebra/trig-cosine-law.html

http://www.mathwarehouse.com/trigonometry/law-of-cosines-formula-examples.php

https://www.khanacademy.org/math/geometry/hs-geo-trig/hs-geo-law-of-cosines/e/law_of_cosines

https://www.youtube.com/watch?v=ZElOxG7_m3c

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https://www.youtube.com/watch?v=QkpDJaze31k

Homework Assignment
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