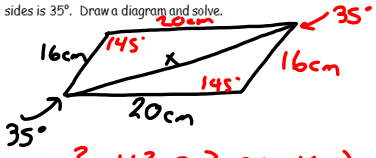
HW 5-1

1. $a^2 = b^2 + c^2 - 2bc\cos A$
2. 3
3. 3
4. $\sqrt{63} \approx 8$ $3\sqrt{7}$
5. 7
6. 14
7. 76° 39'

Dec 5-9:25 PM

The Law of Cosines (SSS) PreCalc Ch 5 Day 2

Warm-up: The lengths of 2 adjacent sides of a parallelogram ABCD are 16 cm and 20 cm. Find the length of the longer diagonal to the nearest cm, if the angle between the two sides is 35°. Draw a diagram and solve.



Adj ∠'s in a ▱ are supplementary

$x^2 = 16^2 + 20^2 - 2(16)(20)\cos 145°$

$\sqrt{x^2} = \sqrt{1180.26}$

$x = 34$ cm

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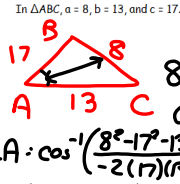
To find an angle of a triangle that does not contain a right angle:

$c^2 = a^2 + b^2 - 2ab\cos C$ ⟶ where C is the angle opposite the side that you need.

For each problem, draw a diagram and solve.

1. In ΔABC, a = 8, b = 13, and c = 17. Find m∠A to the nearest 10 minutes.

2nd → Apps → 4 Standard Rounding



$8^2 = 17^2 + 13^2 - 2(17)(13)\cos A$

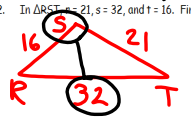
$\cos A = \frac{8^2 - 17^2 - 13^2}{-2(17)(13)}$

$\angle A = \cos^{-1}\left(\frac{8^2 - 17^2 - 13^2}{-2(17)(13)}\right) = 26°57'$

$1° = 60'$

2. In ΔRST, r = 21, s = 32, and t = 16. Find the measure of ∠S to the nearest minute.

2nd Apps 4



$32^2 = 16^2 + 21^2 - 2(16)(21)\cos S$

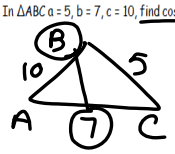
$\angle S = \cos^{-1}\left(\frac{32^2 - 16^2 - 21^2}{-2(16)(21)}\right)$

$\angle S = 119°7'$

27°00'

Dec 5-10:00 PM

3. In ΔABC a = 5, b = 7, c = 10, find cos B as a fraction in lowest terms.



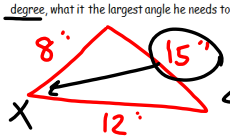
$7^2 = 10^2 + 5^2 - 2(10)(5)\cos B$

$\cos B = \frac{7^2 - 10^2 - 5^2}{-2(10)(5)}$

$\cos B = 19/25$

Alphay=

4. Jed is working on a stained glass project and needs to form a triangle with sides of 8, 12, and 15 inches out of lead cane to enclose the glass. To the nearest tenth of a degree, what it the largest angle he needs to create using the lead caning?



$15^2 = 8^2 + 12^2 - 2(8)(12)\cos X$

$\angle X = \cos^{-1}\left(\frac{15^2 - 8^2 - 12^2}{-2(8)(12)}\right)$

$\angle X = 95.1°$

Dec 5-10:00 PM

Finding the Area of a Triangle (SAS)

Area of a Triangle = $\frac{1}{2}ab\sin C$ Side Included ∠ Side

For each problem, draw a diagram and solve:

1. In ΔABC, m∠A = 150°, b = 8, and c = 10. Find the area of ΔABC.

SAS

$K = \frac{1}{2}(8)(10)\sin 150°$

$= 20$ sq units

2. In parallelogram ABCD, AB = 20, AD = 10, and m∠A = 45°. Find the area of the parallelogram rounded to the nearest tenth.

$K = [\frac{1}{2}ab\sin C]2$

$= ab\sin C$

$= 10 \cdot 20\sin 45°$

$= 141.4$ units^2

Dec 5-10:01 PM

Dec 5-10:03 PM