Turn in Graded HW with work stapled to the back

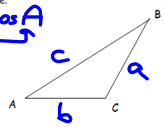
QUIZ

Nov 28-9:17 PM

The Law of Cosines (SAS) Side - Included Angle - Side

The Law of Cosines is commonly used to solve oblique triangles and forms the basis for important trigonometric applications. When two sides of a triangle and the included angle are known, the law of cosines can be used to find the third side.

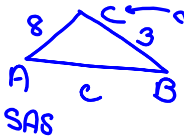
Law of Cosines: $a^2 = b^2 + c^2 - 2bc\cos A$



✱ Degree Mode

For each problem, draw a diagram and solve:

1. In ΔABC, a = 3, b = 8, and cos C = $\frac{1}{4}$. Find c to the nearest integer.



$\cos C = 1/4$

SAS

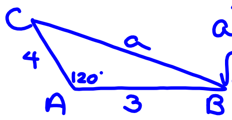
$c^2 = 8^2 + 3^2 - 2(8)(3)(\frac{1}{4})$

$\sqrt{c^2} = \sqrt{61}$

$c = \pm\sqrt{61} \approx 8$

Dec 5-9:16 PM

2. In ΔABC, b = 4, c = 3, ∠A = 120°. Find a to the nearest integer.

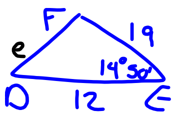


$a^2 = 4^2 + 3^2 - 2(4)(3)\cos 120°$

$\sqrt{a^2} = \sqrt{37} = \pm\sqrt{37} \approx 6$

SAS

3. In ΔDEF, f = 12, d = 19, ∠E = 14°50'. Find e to the nearest integer. 2nd Apps

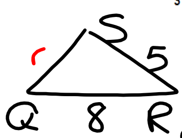


$e^2 = 12^2 + 19^2 - 2(12)(19)\cos 14°50'$

$\sqrt{e^2} = \sqrt{64.196} \approx 8$

Dec 5-9:17 PM

4. In ΔQRS, q = 5, s = 8, and cos R = $\frac{2}{3}$. Find r to the nearest integer.



$r^2 = 8^2 + 5^2 - 2(8)(5)(\frac{2}{3})$

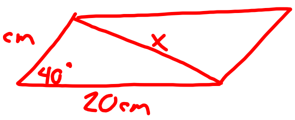
$\sqrt{r^2} = \sqrt{35.7} = \pm\sqrt{35.7}$

$\cos R = 2/3$

≈ 6

SAS

5. In a parallelogram, two sides that are 20 cm and 12 cm long include an angle of 40°. Find the length (to the nearest centimeter) of the shorter diagonal of the parallelogram.



SAS

$x^2 = 12^2 + 20^2 - 2(12)(20)\cos 40°$

$\sqrt{x^2} = \sqrt{176.3}$

$x = 13$ cm

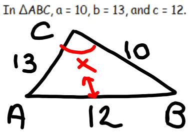
Dec 5-9:17 PM

The Law of Cosines (SSS) $c^2 = a^2 + b^2 - 2ab\cos C$

To find an angle of a triangle that does not contain a right angle where C is the angle opposite the side that you're looking for.

Draw a diagram and solve.

1. In ΔABC, a = 10, b = 13, and c = 12. Find m∠C to the nearest minute. 2nd Apps 4



$12^2 = 13^2 + 10^2 - 2(13)(10)\cos C$

$\cos C = \frac{12^2 - 13^2 - 10^2}{-2(13)(10)}$

$\cos^{-1}\left(\frac{12^2 - 13^2 - 10^2}{-2(13)(10)}\right)$

$= 61°15'51''$ 30 seconds ↑ round up

$= 61°16'$

Dec 5-9:18 PM

Nov 28-9:26 PM