

Adv. Alg.-Trig.

Homework #9.5

1) 8

2) 18

3) 7

4) 7

5) 21

6) 14

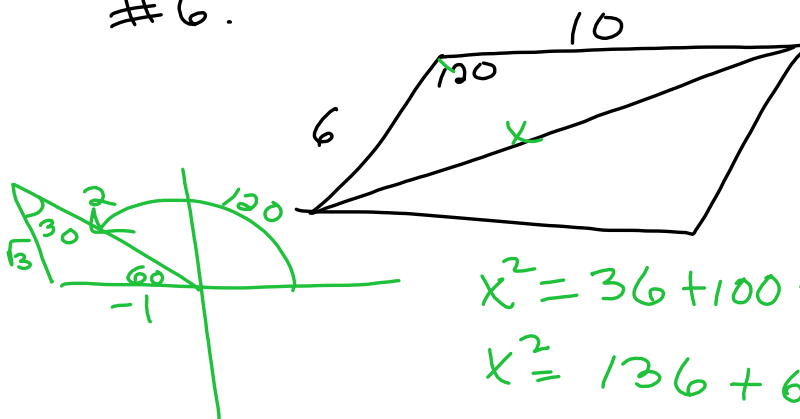
Practice Worksheet8) $b = 34.6$

Jan 25 - 2:32 PM

9-5

#6.

$$\underline{a^2} = b^2 + c^2 - 2bc \cos \underline{A}$$



$$x^2 = 36 + 100 - 2(6)(10) \cos 120$$

$$x^2 = 136 + 60$$

$$x^2 = 196$$

$$x = 14$$

Warm-Up

Find the perimeter of $\triangle ABC$.

$$b = 10, c = 16, \angle A = 60^\circ$$

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Law of Cosines

Given SIDE, SIDE, SIDE

$$\begin{aligned} b^2 &= a^2 + c^2 - 2ac \cos B \\ a^2 &= b^2 + c^2 - 2bc \cos A \\ c^2 &= a^2 + b^2 - 2ab \cos C \end{aligned}$$

Let us solve for Cos A:

Solve for $\cos A$!

$$\frac{a^2 - b^2 - c^2}{-2bc} = \cos A$$

$$\frac{b^2 - a^2 - c^2}{-2ac} = \cos B$$

$$\frac{c^2 - a^2 - b^2}{-2ab} = \cos C$$

Dec 9 - 7:14 AM

Therefore:

$$\cos A =$$

$$\cos B =$$

$$\cos C =$$

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Examples:

$$b^2 = a^2 + c^2 - 2ac \cos B$$

1) $\triangle ABC$, $a=5$, $b=7$, $c=6$, Find $\cos B$.

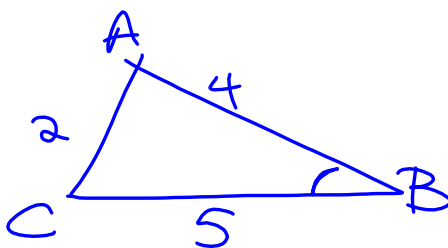
$$\cos B = \frac{b^2 - a^2 - c^2}{-2ac}$$

$$\cos B = \frac{49 - 25 - 36}{-2(5)(6)} = \frac{-12}{-60} = \frac{1}{5}$$

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2) In $\triangle ABC$, the sides are 2, 4, 5. Find to the nearest degree, the smallest angle of the triangle.

across from
the smallest side



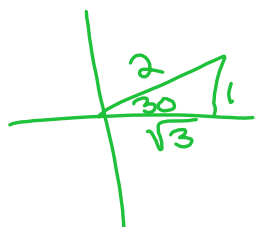
$$\cos B = \frac{4^2 + 5^2 - 2^2}{2(4)(5)}$$

$$\cos B = \frac{-37}{-40}$$

$$B = 22^\circ$$

Dec 9 - 7:14 AM

3) Mr. Solomon is flying from Syracuse to Albany, a distance of 120 miles. He starts his flight 30° off course and flies on this course for 50 miles. How far is he from Albany?



$$x^2 = 50^2 + 120^2 - 2(50)(120)\cos 30$$

$$x^2 = 2500 + 14,400 - 12000 \frac{\sqrt{3}}{2}$$

$$x^2 = 16,900 - 6000\sqrt{3}$$

$$x = 81 \text{ miles}$$

Jan 27-2:03 PM

4) From an observation point on a level corn field, the distance to one of two farms is 250 meters and to the other farm is 300 meters. What is the distance, to the nearest tenth, between the farms if the angle subtended by them at the point of observation is $35^{\circ}10'$?

Jan 22-2:09 PM

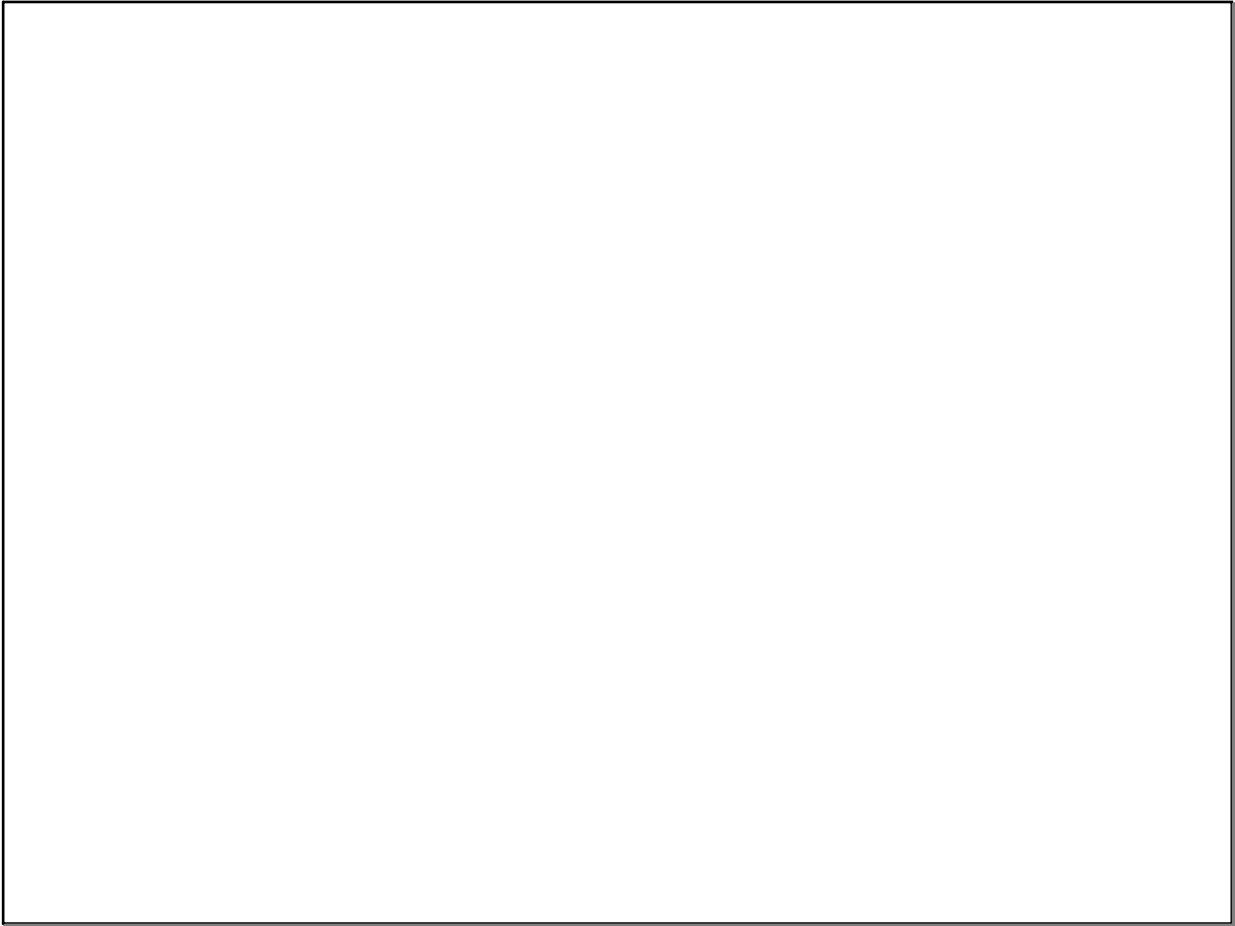
Tonight's HW 9.6

(#1-3 leave as fraction!)

Law of Sines/Cosines

Quiz Thursday

Jan 18-2:10 PM



Jan 22-11:14 AM