HW 5-5

Pg 604

2. B=26°, c=8.9, a=17.2

17. 8.2

Pg 613

17. Law of Sines, a=96.7, C=98°, c=101.9

19. Law of Cosines, A=73.7°, B=51.8°, C=54.5°

Pg 668

1. A=83°, b=14.7, c=12.4

2. B=70.1°, A=73.9°, a=8.2

3. A=99.9°, B=36.8°, C=43.3°

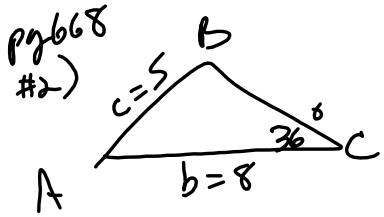
4. 43.6 cm^2

Hw t'night: Round #3 to nearest hundredth, rest to tenth.

Warm-up with #1 & 2 in notes.

Dec 5-10:04 PM

pg668 #2)



① $\frac{5}{\sin 36^\circ} = \frac{8}{\sin B}$

$\sin B = \frac{8 \sin 36^\circ}{5} = .9404\ldots$

Applications of Trig Laws Unit 5 Day 6

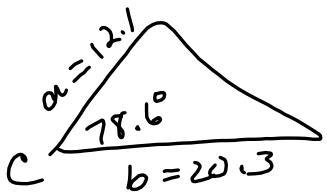
Law of Sines: $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Law of Cosines: $c^2 = a^2 + b^2 - 2ab\cos C$

Area of a Triangle: $k = \frac{1}{2}ab\sin C$

For each problem, draw a diagram to represent the given information. Find all values to the nearest 10th.

1. Given: $C = 78.6^0$, $a = 12.1$, $b = 20.3$ Find c.



$c^2 = (12.1)^2 + (20.3)^2 - 2(12.1)(20.3)\cos 78.6°$

$c^2 = 461.3988$

$c = 21.48 \approx 21.5$

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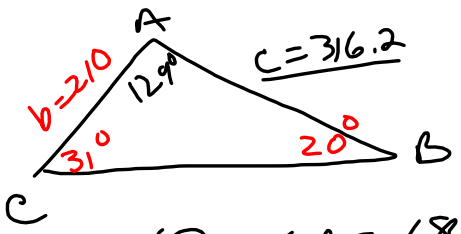
2. $B = 20^0$, $C = 31^0$ and $b = 210$, solve the triangle.



(1) side c, Law of Sines

$\frac{c}{\sin 31°} = \frac{210}{\sin 20°} \rightarrow c = \frac{210\sin 31°}{\sin 20°}$

$c = 316.2$

(2) $m\angle A = 180 - 31 - 20 = 129° = A$

(3) side a, Law of Sines or Cosines

$\frac{a}{\sin 129°} = \frac{210}{\sin 20°} \rightarrow a = \frac{210\sin 129°}{\sin 20°}$

$a = 477.2$

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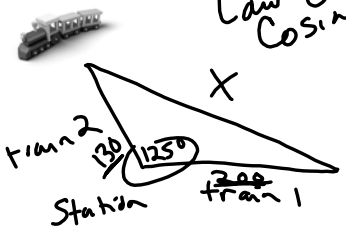
Hw t'night: Round #3 to nearest hundredth, rest to tenth.
Write this on your hw.

QUIZ

Nov 30-3:09 PM

3. Two trains leave a station on different tracks. The tracks make an angle of 125^0 with the station as vertex. The first train travels at an average speed of 100 km/hr, and the second travels at an average speed of 65 km/hr. How far apart are the trains after 2 hours?



Law of Cosines

$x^2 = (130)^2 + (200)^2 - 2(130)(200)\cos 125^\circ$

$x^2 = 86725.974\ldots$

$x \approx 294.5$ km apart

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4. An airplane A takes off from carrier ~~B~~ C and flies in a straight line for 12 km. At that instant, an observer on destroyer ~~C~~ D located 5 km from the carrier, notes that vertex angle determined by the carrier, the destroyer and the plane is 37^0. How far is the plane from the destroyer?

① $\frac{12}{\sin 37^\circ} = \frac{5}{\sin A}$

$\sin A = \frac{5\sin 37^\circ}{12} = .250756$

$A = \sin^{-1}(.2507\ldots) = 14.52226$ → A

② $180 - 37 - A = 128.4777\ldots$ (14.52..) → A

③ $\frac{X}{\sin C} = \frac{12}{\sin 37^\circ}$ (128.47..)

$X = \frac{12\sin(128.47..)}{\sin 37^\circ} = 15.6\text{ km}$

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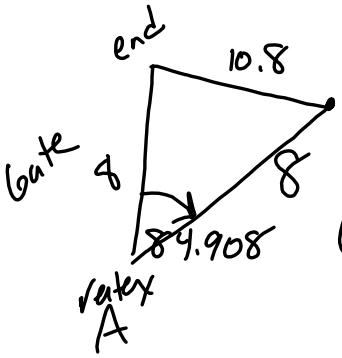
5. A stake is located 10.8 feet from the end of a closed gate that is 8 feet long. The gate swings open, and its end hits the stake. Through what angle did the gate swing? Round the angle to the nearest minute.



$\frac{10.8}{\sin A} = \frac{8}{\sin}$

① $\angle A$ Law of Cos

$10.8^2 = 8^2 + 8^2 - 2(8)(8)\cos A$

$\cos A = \frac{10.8^2 - 8^2 - 8^2}{-2(8)(8)} = .08875..$

$A = \cos^{-1}(.08875) = 84.908$

DMS $= 84^\circ 54' 29.88''$ ≈ $84^\circ 54'$

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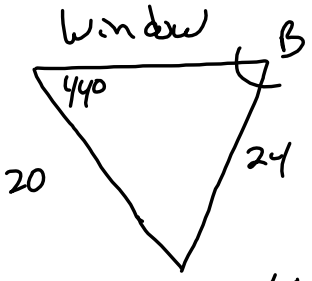
6. A triangular banner is hung from a window along the side of a building. The ~~edges~~ ends that touch the window are 20 and 24 feet long respectively. The third side is parallel to the ground. The angle between the 20-foot side and the third side is 44°. What is the area of the banner?



(1) $\frac{24}{\sin 44^\circ} = \frac{20}{\sin B}$

$\sin B = \frac{20 \sin 44^\circ}{24} = .57888$

$B = \sin^{-1}(.5788..) = 35.3719$

B

(2) $\angle C = 180 - 44 - 35.3719..$

$\angle C = 100.62805...$

(3) Area $= K = \frac{1}{2}(20)(24)\sin(100.62805^\circ)$

$K \approx 235.9$ feet^2

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Dec 7-9:46 PM