

Homework:

- 7.1 #1-21 odd solving triangles with Law of Sines
- 7.1 #29,30,33,34,35 word problems with Law of Sines

- 7.2 #9-19 odd solving triangles with Law of Cosines
- 7.2 #25-29 odd; area
- 7.2 #38,43,46,47,48 word problems with Law of Cosines
- 7.3 #37, 41, 43 **word problems with Law of Sines/Cosines**

Expect a **quiz** on Law of Sines/Cosines on **Thursday** (tomorrow, 6 Feb)

Homework due Friday (last homework grade)

Test #4 Canceled

Thurs: continue with law of sines/cosines applications, begin review

Fri, Mon: review for **Comprehensive Final Exam (1:00pm Wed. 12 Feb)**

Ch 7: Applied Problems
with the Law of Sines and Cosines

7.1 #32

Three roads intersect in such a way as to form a triangular piece of land. Find the lengths of the other two sides of the land.

AAS \Rightarrow L.S

$\angle C = 180^\circ - 54^\circ - 47^\circ = 79^\circ$

$\frac{b}{\sin 47^\circ} = \frac{320}{\sin 54^\circ}$

$\frac{c}{\sin 79^\circ} = \frac{320}{\sin 54^\circ}$

$b = 289.3 \text{ ft}$

$c = 368.3 \text{ ft}$

7.1 #34

Two fire lookouts are located on mountains 20 miles apart. Lookout **B** is at a bearing of $S65^\circ E$ from **A**. A fire was sighted at a bearing of $N50^\circ E$ from **A** and at a bearing of $N8^\circ E$ from **B**. Find the distance of the fire from lookout **A**.

$\frac{20}{\sin 42^\circ} = \frac{x}{\sin 73^\circ}$

$x = \frac{20 \sin 73^\circ}{\sin 42^\circ}$
 $\approx 28.6 \text{ mi}$

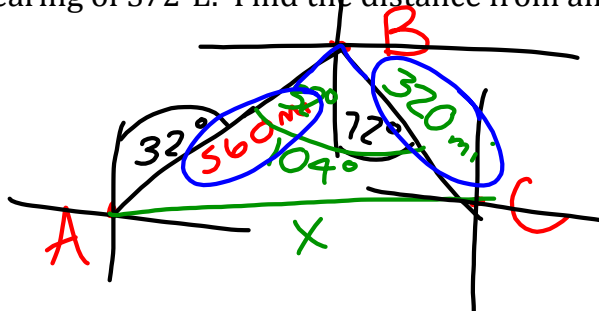
7.1 #36

The navigator on a ship traveling due east at 8 mph sights a lighthouse at a bearing of $S55^\circ E$. One hour later it is sighted at a bearing of $S25^\circ W$. Find the closest the ship came to the lighthouse.

$\tan 55^\circ = \frac{8-y}{x}$
 $\tan 25^\circ = \frac{y}{x}$
 $x \tan 55^\circ = 8 - y$; $x \tan 25^\circ = y$
 $x \tan 55^\circ = 8 - x \tan 25^\circ$
 $x \tan 55^\circ + x \tan 25^\circ = 8$
 $x (\tan 55^\circ + \tan 25^\circ) = 8$
 $X = \frac{8}{\tan 55^\circ + \tan 25^\circ} \text{ mi}$
 $\approx 4.2 \text{ mi}$

7.2 #37

A plane leaves airport **A** and travels 560 miles to airport **B** at a bearing of N32°E. The plane leaves airport **B** and travels to airport **C** 320 miles away at a bearing of S72°E. Find the distance from airport **A** to airport **C**.



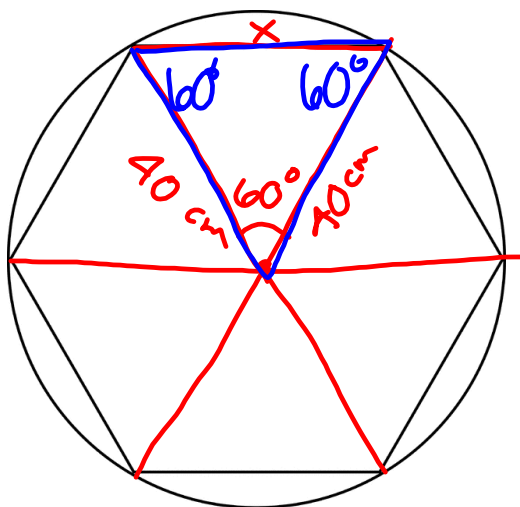
$$X^2 = 320^2 + 560^2 - 2(320)(560)\cos 104^\circ$$

$$X = \sqrt{320^2 + 560^2 - 2(320)(560)\cos 104^\circ}$$

$$\approx \boxed{709 \text{ mi}}$$

7.2 #45

A regular hexagon is inscribed in a circle with a radius of 40 centimeters. Find the length of one side of the hexagon.

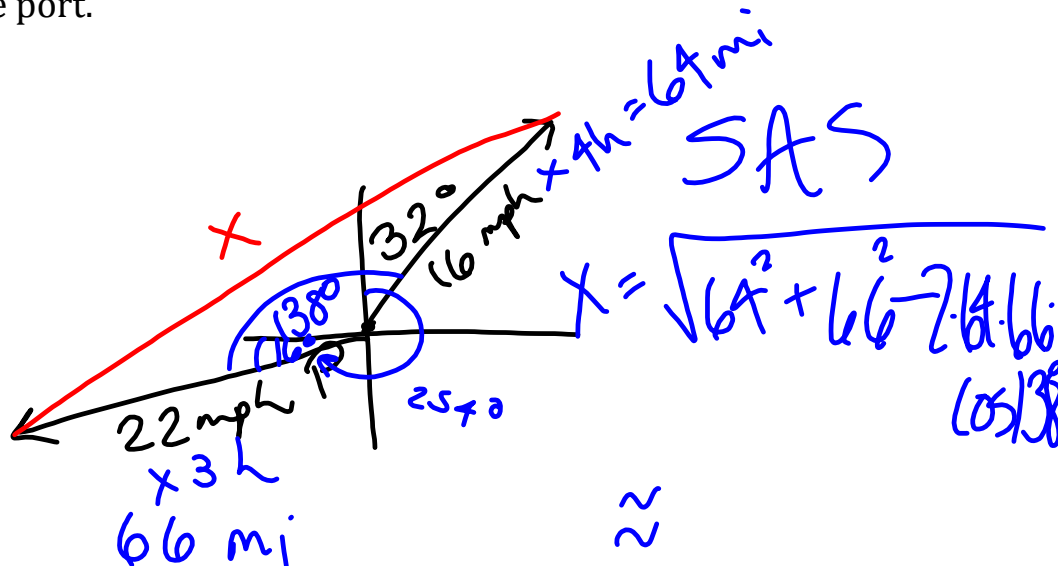


$$X = 40 \text{ cm}$$

* heading is always measured clockwise from N

7.2 #52

A ship leaves a port at a speed of 16 mph at a heading of 32° . One hour later another ship leaves the port at a speed of 22 mph at a heading of 254° . Find the distance between the ships 4 hours after the first ship leaves the port.



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