Assignments for the Week of Oct. 17

- Read 7.1-7.3
- 45 minutes of Khan Academy
- Textbook assignment due Friday 10/21:

7.1 #1-21 odd; 29,30,33,34,35	Law of Sines
• 7.2 #9-19 odd	Law of Cosines
#25-29odd;	Area
#38,43,46,47,48	Law of Cosines
• 7.3 #37,41,43	word problems with Law of Sines/Cosines

Test #4 - Friday, 10/21

57. Solve for $x \in [0, 2\pi)$

$$2\cos^3 x = \cos x$$

$$2\cos^3 x - \cos x = 0$$

$$\cos x(2\cos^2 x - 1) = 0$$

$\cos x = 0$, $2\cos^2 x - 1 = 0$

$x = \frac{\pi}{2}, \frac{3\pi}{2}$

$2\cos^2 x = 1$

$\cos^2 x = \frac{1}{2}$

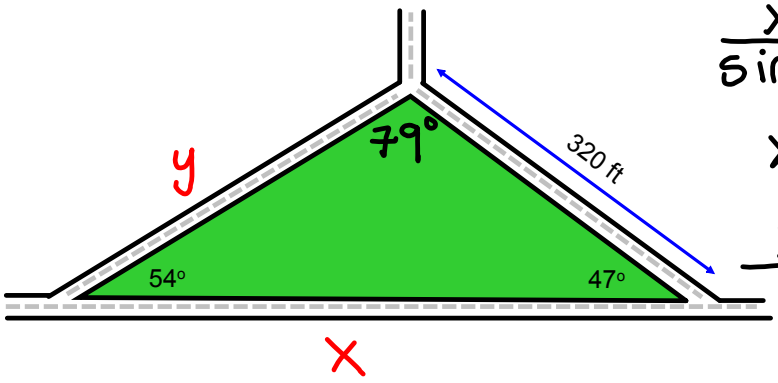
$\cos x = \pm\frac{1}{\sqrt{2}}$

$x = \frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$

Word 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.



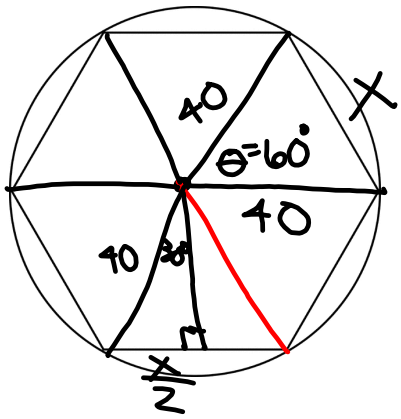
$$\frac{x}{\sin 79^\circ} = \frac{320}{\sin 54^\circ}$$

$$x = 388.27 \text{ ft}$$

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

$$y = 289.28 \text{ ft}$$

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



$$\theta = \frac{360^\circ}{6} = 60^\circ$$

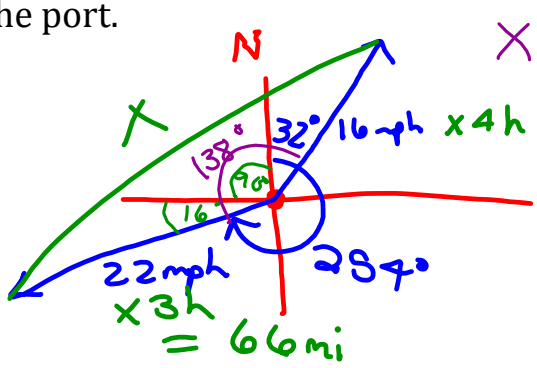
$$x = \sqrt{40^2 + 40^2 - 2(40)(40)\cos 60^\circ}$$

$$= 40 \text{ cm}$$

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.



$X = \sqrt{64^2 + 66^2 - 2(64)(66)\cos 138^\circ}$

$X = 121.37$ mi

How many solutions does each of these triangles have?

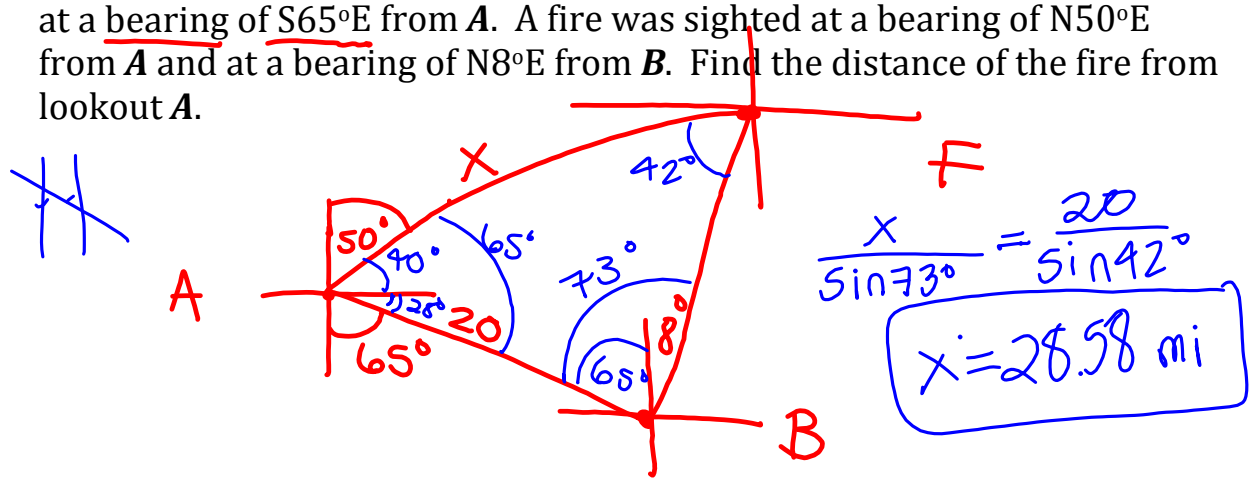
1. a=2.53 , b=3.76 , c=8.04 — 0 (SSS)
2. A=15° , a=4 , c=11 — 2 (ASS)

3. A=72° , b=8.4 , c=17.2 — 1 (SAS)
4. B=64° , b=2 , c=17 — 0 (ASS)
5. C=23° , b=4.9 , c=9.8 — 1 (ASS)

S65°E = "65° east of south"

7.1 #34

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



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

$x = 28.58$ mi