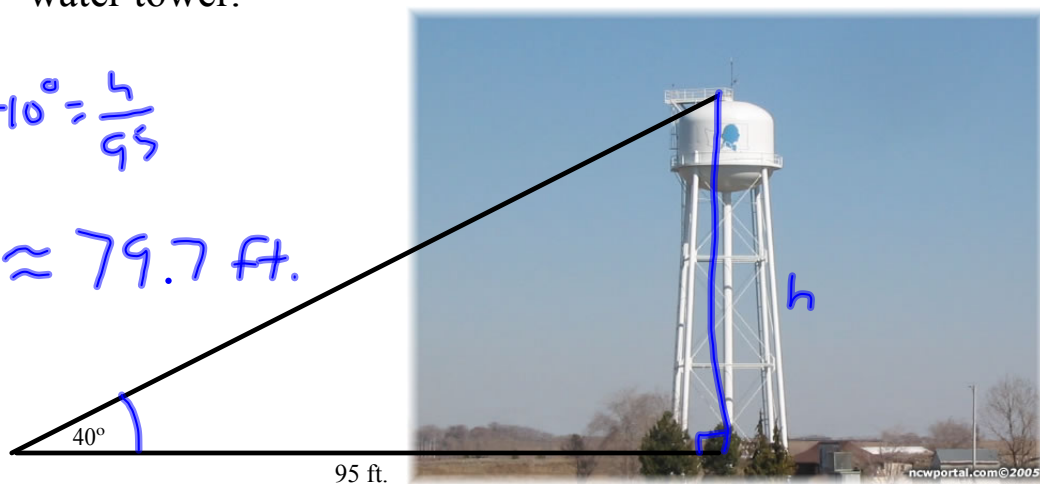


4-8 Trigonometry Applications

Ex 1 Find the height of the water tower.

$$\tan 40^\circ = \frac{h}{95}$$

$$h \approx 79.7 \text{ ft.}$$

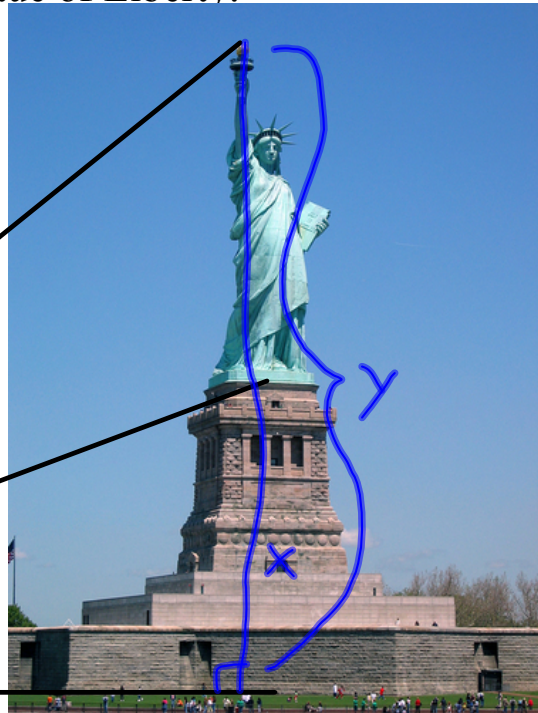
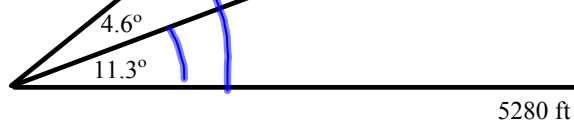


Ex 2 Find the height of the Statue of Liberty.

$$\tan 11.3^\circ = \frac{x}{5280} \rightarrow x \approx 1055 \text{ ft.}$$

$$\tan 15.9^\circ = \frac{y}{5280} \rightarrow y \approx 1504 \text{ ft.}$$

449 ft.

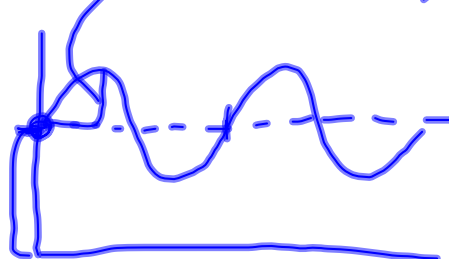


Ex 3 One night, when Mr. Ebert was playing records on his record player, a fly was sitting on his favorite Barry Manilow record. The distance the fly was from Mr. Ebert at different times is shown below. Find a sine regression model for this situation, and interpret the model.

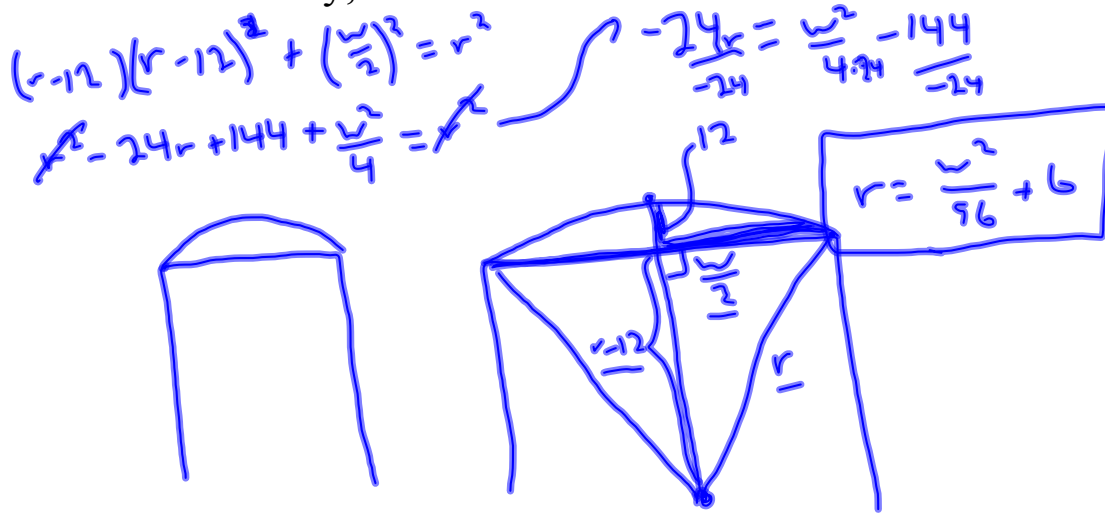
t	d
0	5 ft.
1	7
3	9
4	10
6	8
8	6
9	5

$$y = a \sin(bx + c) + d$$

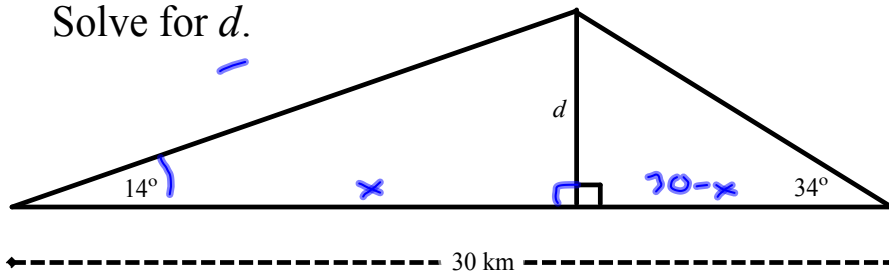
$$y = 2.4 \sin(-.6x - .9) + 7.3$$



Ex 4 In the Oregon High School construction class, Mr. Prahl was trying to figure out how to cut the 12" high arc above a doorway. If you know the width of the doorway, what is the radius of the arc?



Ex 5 Solve for d .



$$\tan 14^\circ = \frac{d}{x}$$

$$\tan 34^\circ = \frac{d}{30-x}$$

$$x \tan 14^\circ = d$$

$$(30-x) \tan 34^\circ = d$$

$$x \tan 14^\circ = (30-x) \tan 34^\circ$$

$$x \tan 14^\circ = 30 \tan 34^\circ - x \tan 34^\circ$$

$$x \tan 14^\circ + x \tan 34^\circ = 30 \tan 34^\circ$$

$$x (\tan 14^\circ + \tan 34^\circ) = 30 \tan 34^\circ$$

$$x = 21.9 \text{ km}$$

$$d = 5.5 \text{ km}$$

Homework
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