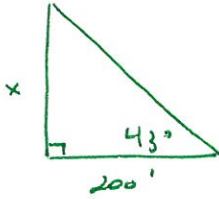


Pre-Calculus

Semester Review (word problems)

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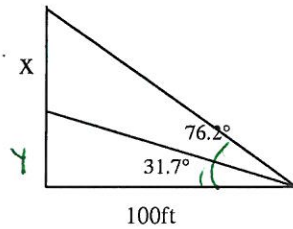
1. A person standing 200 feet from a building determines that the angle of elevation to the top of the building is 43° (from the ground). How tall is the building?



$$\tan 43^\circ = \frac{x}{200}$$

$$x = 186.5 \text{ ft}$$

2. Find x

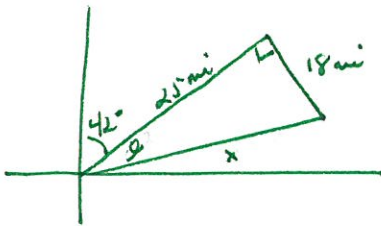


$$\tan 31.7^\circ = \frac{y}{100} \quad y = 61.8'$$

$$\tan 76.2^\circ = \frac{x+y}{100} \quad x+y = 407.1'$$

$$x = 345.3 \text{ ft}$$

3. A boat leaves the harbor on a bearing of $N42^\circ E$ for 25 miles. It turns 90° clockwise on a bearing of $S48^\circ E$ for 18 miles. How far is the boat from the harbor? What is its bearing with regard to the harbor?



$$1) \quad 25^2 + 18^2 = x^2 \quad (x = 30.8 \text{ mi})$$

$$2) \quad \tan \theta = \frac{18}{25} \quad \theta = 35.8^\circ$$

$$(N 77.8^\circ E)$$

4. A regular hexagon is inscribed in a circle of radius 20 inches. Find the length of the side of the hexagon.



$$30-60-90 \triangle \rightarrow x = 10$$

or

$$\sin 30^\circ = \frac{x}{20} \Rightarrow x = 10$$

$$\text{Side length} = 20 \text{ in}$$