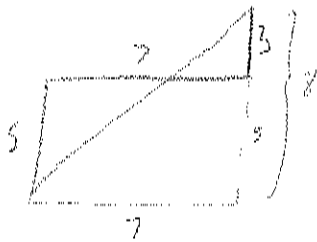


More Application of Trigonometry

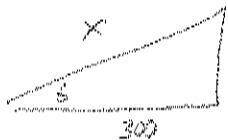
- 1) Katrina hikes 5 miles north, 7 miles east, and then 3 miles north again. To the *nearest tenth of a mile*, how far, in a straight line, is Katrina from her starting point?



$$\begin{aligned} a^2 + b^2 &= c^2 \\ 7^2 + 8^2 &= c^2 \\ 49 + 64 &= c^2 \\ 113 &= c^2 \\ c &= 10.63014581 \end{aligned}$$

$$c = 10.6 \text{ miles}$$

- 2) The angle of elevation of a ramp is 6° . To the **nearest tenth**, how long is the ramp if it's horizontal base is 300 feet?



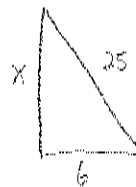
$$\frac{\cos 6}{1} = \frac{300}{X}$$

$$\frac{X \cos 6}{\cos 6} = \frac{300}{\cos 6}$$

$$X = 301.6524839$$

$$X = 301.7 \text{ ft}$$

- 3) To the **nearest tenth** of a foot, how high up a wall does a 25-foot ladder reach if the foot of the ladder is 6 feet from the wall?



$$a^2 + b^2 = c^2$$

$$X^2 + 6^2 = 25^2$$

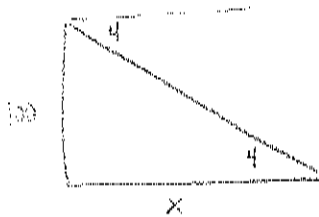
$$X^2 + 36 = 625$$

$$X^2 = 589$$

$$X = 24.2693221$$

$$X = 24.3 \text{ ft}$$

- 4) From the "crows nest" of a ship, 100 feet above the water, a lifeboat is observed at an angle of depression of 4° . How far from the ship is the lifeboat, to the nearest whole number?



$$\frac{\tan 4}{1} = \frac{100}{X}$$

$$\frac{X \tan 4}{\tan 4} = \frac{100}{\tan 4}$$

$$X = 1,430.066626$$

$$X = 1,430 \text{ ft}$$

- 5) In right triangle ABC, $\angle C$ is the right angle. If the $\sin A = \frac{10}{26}$, find the value of the $\tan A$.



$$a^2 + b^2 = c^2$$

$$10^2 + b^2 = 26^2$$

$$100 + b^2 = 676$$

$$b^2 = 576$$

$$b = 24$$

$$\tan A = \frac{10}{24}$$

