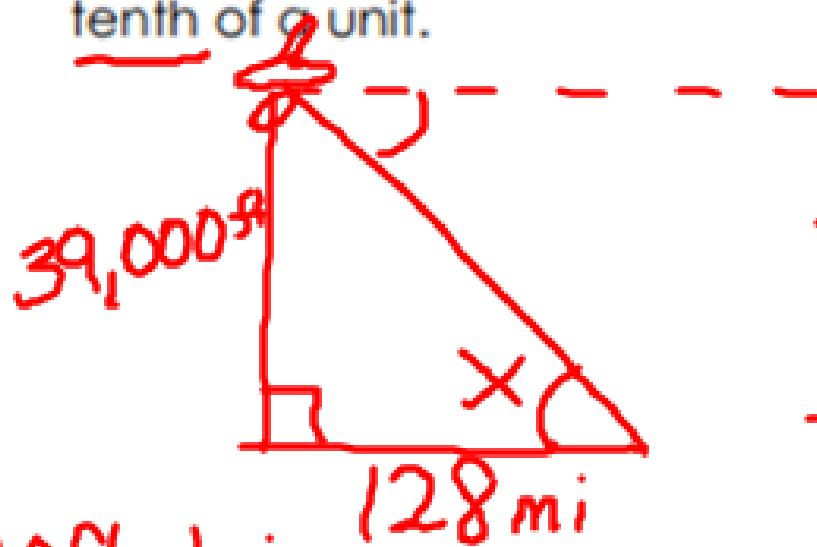


1. Suppose that an airplane is currently flying at an altitude of 39,000 feet and will be landing on a tarmac 128 miles away. Find the average angle at which the airplane must descend for landing. Round your answer to the nearest tenth of a unit.



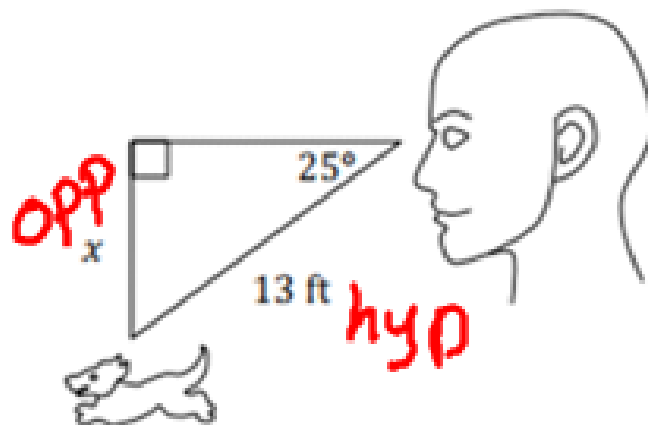
$$5280 \text{ ft} = 1 \text{ mi} \quad \frac{128 \text{ mi} \times 5280}{675,840}$$

$$\tan x = \frac{39,000}{675,840}$$

$$\tan^{-1} x = .0577$$

$$\angle X = 3.3^\circ$$

2. Consider the diagram below that represents someone's eye level as he looks at his dog. Find the value of x , and round to the nearest hundredth of a foot.



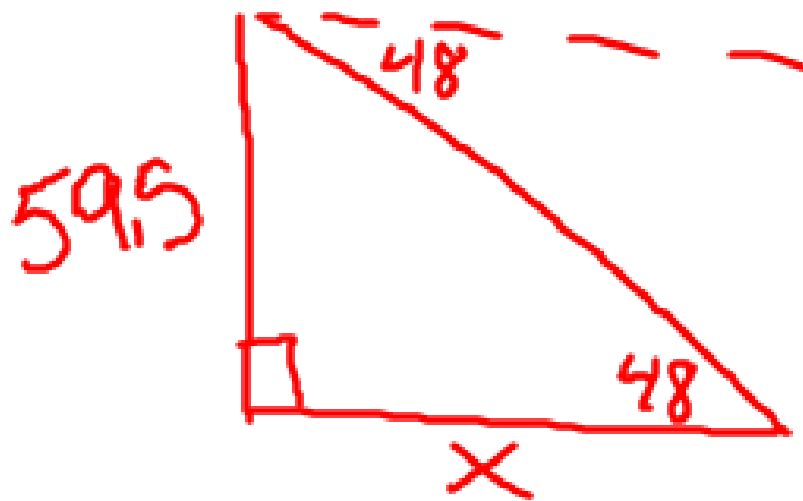
$$\sin 25 = \frac{x}{13}$$

$$13 \sin 25 = x$$

$$13 * 25 \sin =$$

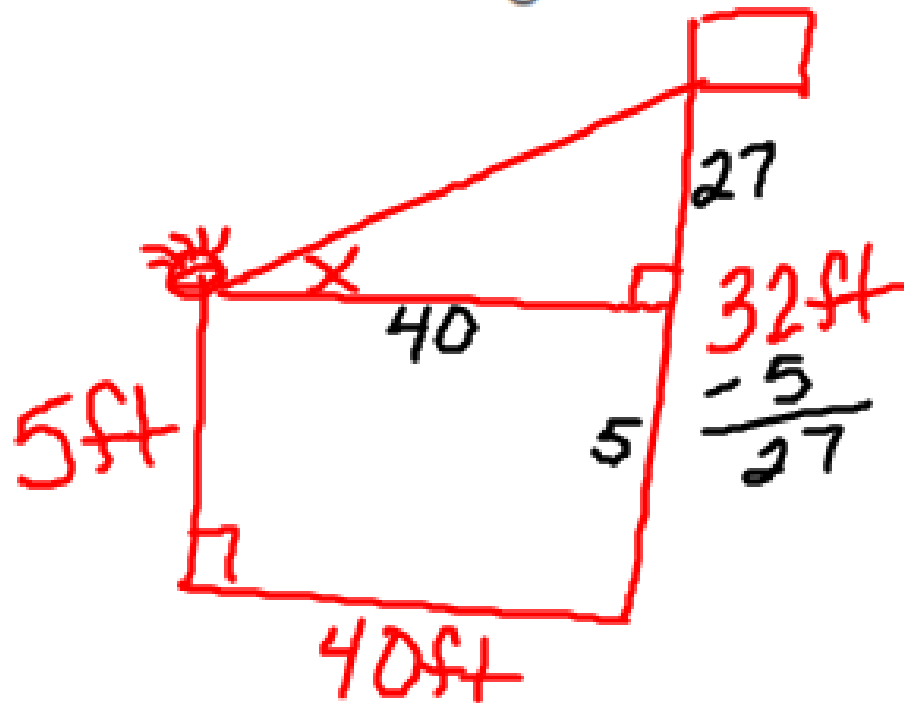
$$x = 5.49 \text{ ft}$$

Suppose that you are standing on a hill that is 59.5 ft tall looking down on a lake at an angle of depression of 48° . How far are you from the lake? Round your answer to the nearest foot.



$$\begin{aligned}\tan 48 &= \frac{59.5}{x} \\ x &= \frac{59.5}{\tan 48} \\ 59.5 \div 48 \tan &= \\ 54 \text{ ft} &\end{aligned}$$

If Lionel has an eye level of 5 feet above the ground and he is standing 40 feet from a flagpole that is 32 feet tall, then what is the angle of elevation?

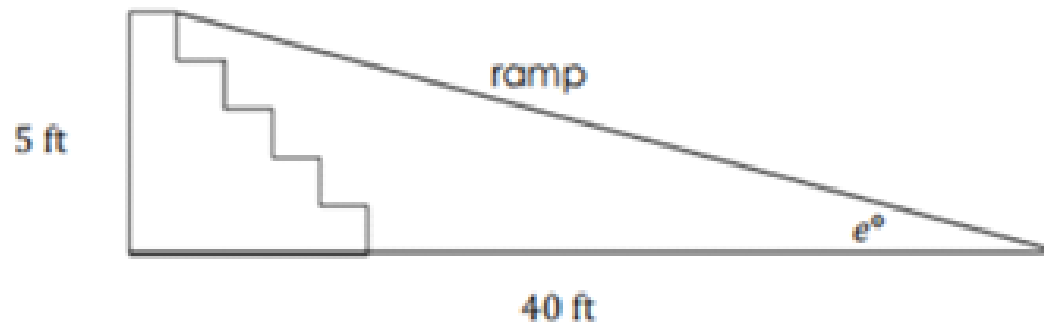


$$\tan x = \frac{27}{40}$$

$$\tan^{-1} x = .675$$

$$\angle x = 34$$

Yandel will place a ramp over a set of stairs at the backyard entrance so that one end is 5 feet off the ground. The other end is at a point that is a horizontal distance of 40 feet away, as shown in the diagram. The angle of elevation of the ramp is represented by e° .



What is the angle of elevation to the nearest tenth of a degree?

$$\begin{aligned}\tan e &= \frac{5}{40} \\ \tan^{-1} e &= 0.125 \\ \angle e &= 7.1^\circ\end{aligned}$$