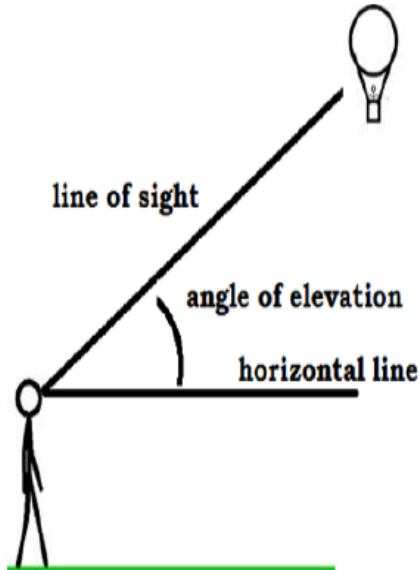


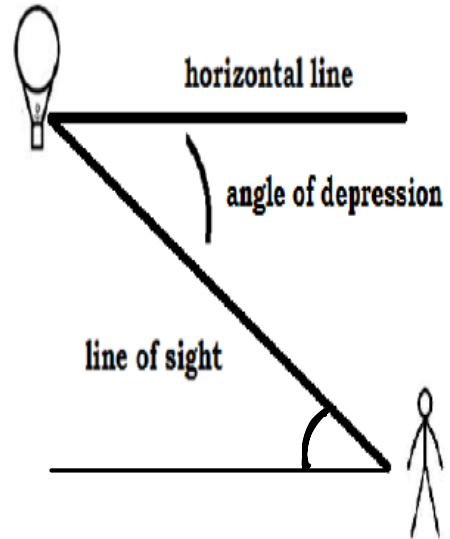
Angle of Elevation

The angle between the horizontal and the line of sight to an object when looking up



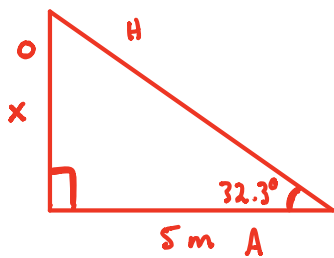
Angle of Depression

The angle between the horizontal and the line of sight to an object when looking down



1. A tree casts a 5m shadow. Find the height of the tree if the angle of elevation of the sun is 32.3°.

Sketch:



Work:

SOH CAH TOA

$$\frac{\tan 32.3}{1} = \frac{x}{5}$$

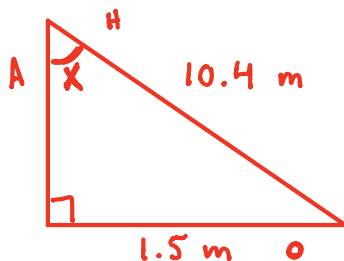
$$x = 5 \tan 32.3$$

Answer:

$$x \approx 3.16 \text{ m}$$

2. A ladder 10.4 m long leans against a building that is 1.5 meters away. What is the angle formed by the ladder and the building?

Sketch:



Work:

SOH CAH TOA

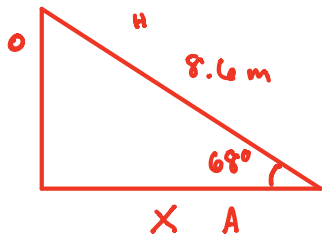
$$\sin^{-1} = \frac{1.5}{10.4}$$

Answer:

$$x \approx 8^\circ$$

3. A ladder 8.6 m long makes an angle of 68° with the ground as it leans against a building. How far is the foot of the ladder from the foot of the building?

Sketch:



Work:

~~SOH CAH TOA~~

$$\frac{\cos 68}{1} = \frac{x}{8.6}$$

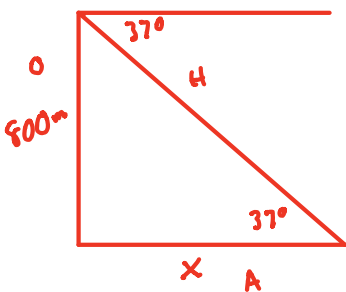
$$x = 8.6 \cos 68$$

Answer:

$$x \approx 3.22 \text{ m}$$

4. The angle of depression from the top of a cliff 800 meters high to the base of a log cabin is 37° . How far is the cabin from the foot of the cliff?

Sketch:



Work:

~~SOH CAH TOA~~

$$\frac{\tan 37}{1} = \frac{800}{x}$$

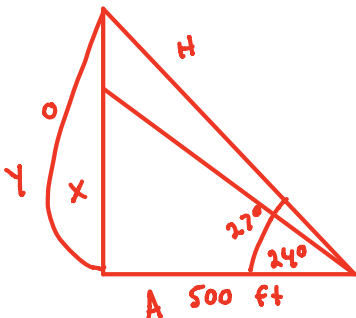
$$x \tan 37 = \frac{800}{\tan 37}$$

Answer:

$$x \approx 1061.64 \text{ m}$$

6. From a point on the ground 500 ft from the base of a building, it is observed that the angle of elevation to the top of the building is 24° and the angle of elevation to the top of a flagpole atop the building is 27° . Find the height of the building and the length of the flagpole.

Sketch:



Work:

~~SOH CAH TOA~~

$$\tan 24 = \frac{x}{500} \quad \left| \quad \tan 27 = \frac{y}{500}$$

$$x = 500 \tan 24 \quad \left| \quad y = 500 \tan 27$$

Answer:

$$x \approx 222.61 \text{ ft.}$$

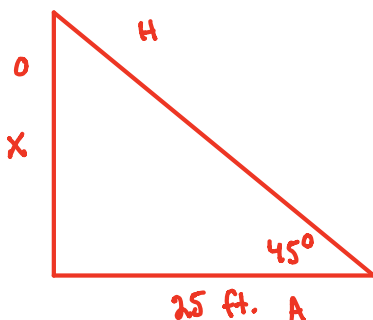
$$y \approx 254.76 \text{ ft}$$

$$254.76 - 222.61 = 32.15 \text{ ft.}$$

(Flagpole)

5. Mrs. Roberts stands 25ft from the flagpole. She looks and the angle of elevation to the top of the flagpole is 45 degrees. Find the height of the flagpole.

Sketch:



Work:

~~SOH CAH TOA~~

$$\tan 45 = \frac{x}{25}$$

$$x = 25 \tan 45$$

Answer:

$$x \approx 25 \text{ ft.}$$