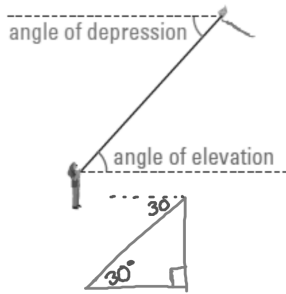


Angle of Depression and Angle of Elevation:

Both are angles with one side that is a horizontal line. When the second side of the angle is below the horizontal, the angle formed is an angle of depression. When the second side of the angle is above the horizontal, the angle formed is an angle of elevation.

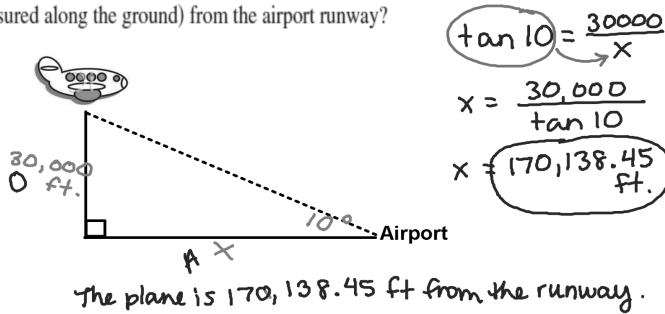


Decide if each of the following forms an angle of elevation or an angle of depression.

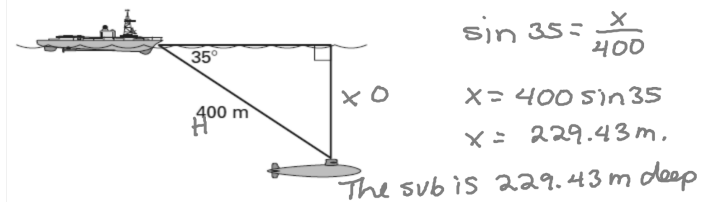
- the line-of-sight of a person standing at the top of a building looking at the street
depression
- the line-of-sight of a person standing at the top of a building looking at an airplane in the sky
elevation
- a guy wire from the ground to the top of a pole
elevation
- a guy wire from the top of a pole to the ground
depression

Finding the Distance to the Airport:

An airplane flying at an altitude of 30,000 feet is headed toward an airport. To guide the airplane to a safe landing, the airport's landing system sends radar signals from the runway to the airplane at a 10° angle of elevation. How far is the airplane (measured along the ground) from the airport runway?

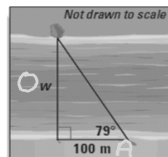


Submarine A sonar operator on a ship detects a submarine at a distance of 400 meters and an angle of depression of 35° . How deep is the submarine?



River Width:

To measure the width of a river you plant a stake on 1 side of the river, directly across from a boulder. You then walk 100 meters to the right of the stake and measure a 79° angle between the stake and the boulder. What is the width (w) of the river?



$\tan 79 = \frac{w}{100}$
 $w = 100 \tan 79 = 514.455 \text{ m}$
 The river is 514.455 m. wide.

You lean a 16 foot ladder against the wall. If the base is 4 feet from the wall, what angle does the ladder make with the ground?



$\cos \theta = \frac{4}{16}$
 $\cos^{-1} (4/16)$
 $\theta = 75.5^\circ$
 The ladder forms a 75.5° angle with the ground.