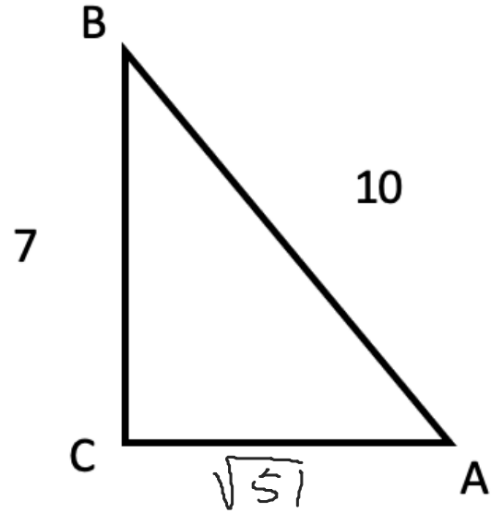
Given right triangle ABC with right angle C. Find the value of sine, cosine, and tangent of angle A



$$\sin A = \frac{7}{10}$$

$$\cos A = \frac{\sqrt{51}}{10}$$

$$\tan A = \frac{7}{\sqrt{51}}$$

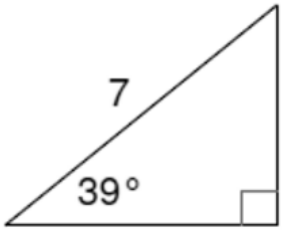
$$7^2 + b^2 = 10^2$$

$$49 + b^2 = 100$$

$$b^2 = 51$$

$$b = \sqrt{51}$$

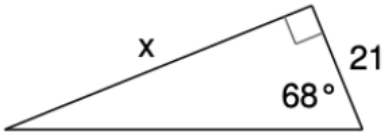
Find the missing side length



$7(\cos 39^\circ) = \left(\frac{x}{7}\right)7$

$x = 7 \cdot \cos 39^\circ$

$x = 5.44$



$\tan 68^\circ = \frac{x}{21}$

$x = 21 \cdot \tan 68$

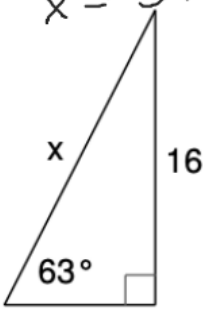
$= 51.97$

$\cos 72^\circ = \frac{6}{x}$

$x \cos 72 = 6$

$x = \frac{6}{\cos 72}$

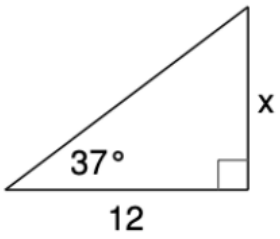
$= 19.41$



$\sin 63^\circ = \frac{16}{x}$

$x = \frac{16}{\sin 63}$

$= 17.95$

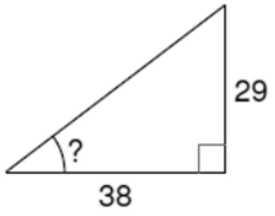


$\tan 37^\circ = \frac{x}{12}$

$x = 12 \cdot \tan 37$

$= 9.04$

Find the angle measure. θ - theta



$\tan\theta = \frac{29}{38}$

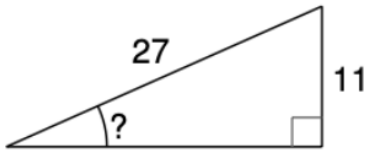
$\tan^{-1}\left(\frac{29}{38}\right) = \theta$

$\theta = 37.3$

$\sin\theta = \frac{40}{42}$

$\sin^{-1}\left(\frac{40}{42}\right) = \theta$

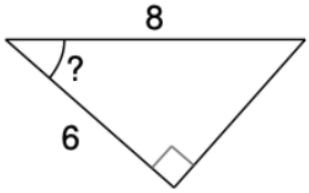
$\theta = 72.24°$



$\sin\theta = \frac{11}{27}$

$\sin^{-1}\left(\frac{11}{27}\right) = \theta$

$\theta = 24.04$

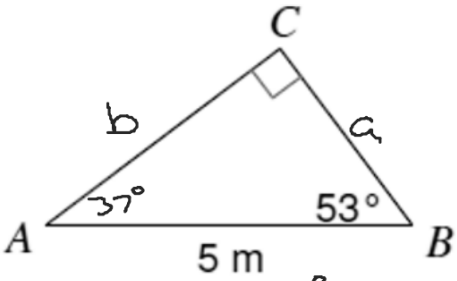


$\cos\theta = \frac{6}{8}$

$\cos^{-1}\left(\frac{6}{8}\right) = \theta$

$\theta = 41.41°$

Solve the right triangle – All missing Sides
All missing Angles



$m\angle A = 37°$

$a = 3.01\ m$

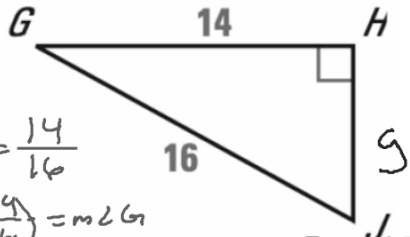
$b = 3.99m$

$\cos 53° = \frac{a}{5}$

$a = 5\cos 53$

$\sin 53° = \frac{b}{5}$

$b = 5\sin 53°$



$\cos G = \frac{14}{16}$

$\cos^{-1}\left(\frac{14}{16}\right) = m\angle G$

$m\angle G = 28.95$

$m\angle J = 61.05$

$g = 16^2 - 14^2 = 5^2$

$g = \sqrt{60}$

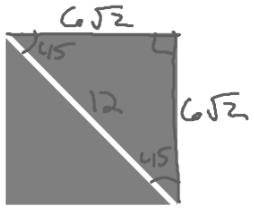
$= \sqrt{4}\cdot\sqrt{15}$

$2\sqrt{15}$

$\cos^{-1} = \arccos$

$\sin^{-1} = \arcsin$

The length of a diagonal of a square is 12 in. Find the area of the square.



$$s = \frac{12}{\sqrt{2}}\frac{\sqrt{2}}{\sqrt{2}} = \frac{12\sqrt{2}}{2} = 6\sqrt{2}$$

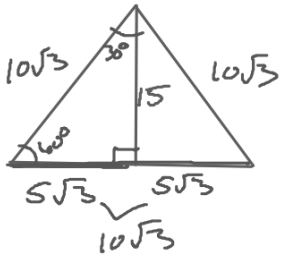
$$A = (6\sqrt{2})(6\sqrt{2})$$

$$= 36\sqrt{4}$$

$$36 \cdot 2$$

$$72 \text{ in}^2$$

The altitude of an equilateral triangle is 15 cm. Find the perimeter of the triangle.



$P = a + b + c$

$\frac{15}{\sqrt{3}} \frac{\sqrt{3}}{\sqrt{3}} = \frac{15\sqrt{3}}{3}$

$= 5\sqrt{3}$

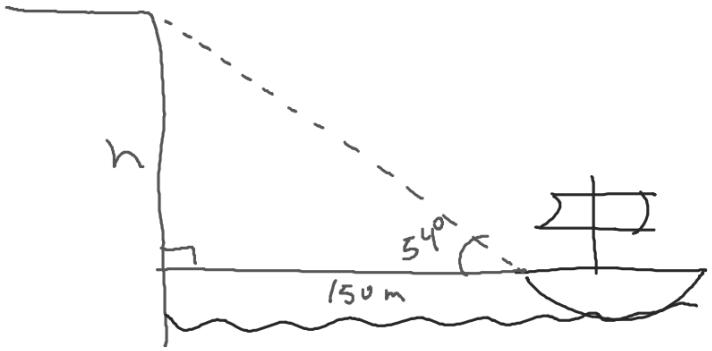
$P = 30\sqrt{3}$ cm

The height of an inaccessible cliff needs to be calculated. From a boat, which is 150 m out from the bottom of the cliff, the angle of elevation to the top of the cliff is 54°. Find the height of the cliff.

$$\tan 54^\circ = \frac{h}{150}$$

$$h = 150 \tan 54^\circ$$

$$= 206.45 \text{ m}$$



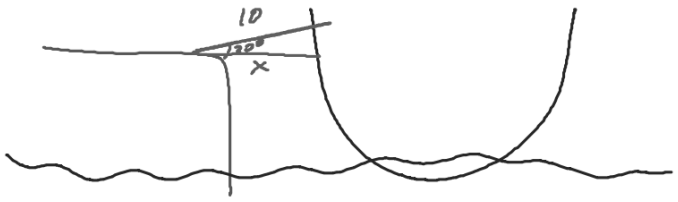
A ladder is leaning against a building. The ladder is 10m long and it is sitting on the ground 4m out from the building. What is the angle that the ladder makes with the ground?

$\cos\theta = \frac{4}{10}$

$\cos^{-1}\left(\frac{4}{10}\right) = \theta$

$\theta = 66.4^\circ$

A gangplank is a narrow ramp used for boarding or leaving a ship. The maximum safe angle of elevation of the gangplank is 20°. Suppose a gangplank is 10 feet long. What is the closest a ship can come to the dock for the gangplank to be used?

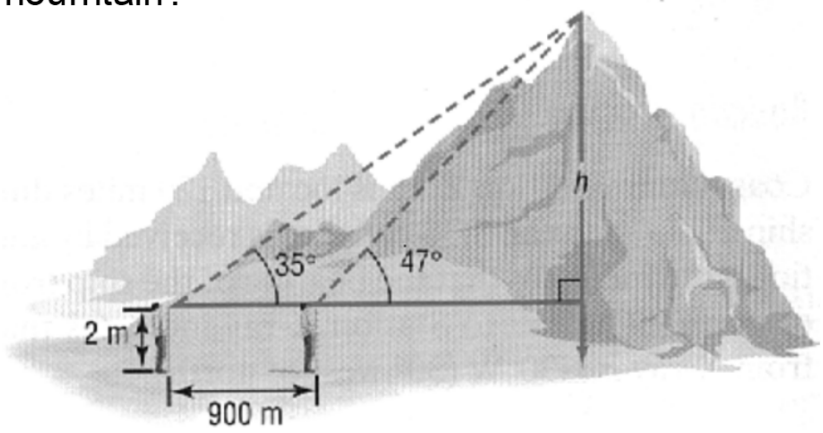


$\cos 20^\circ = \frac{x}{10}$

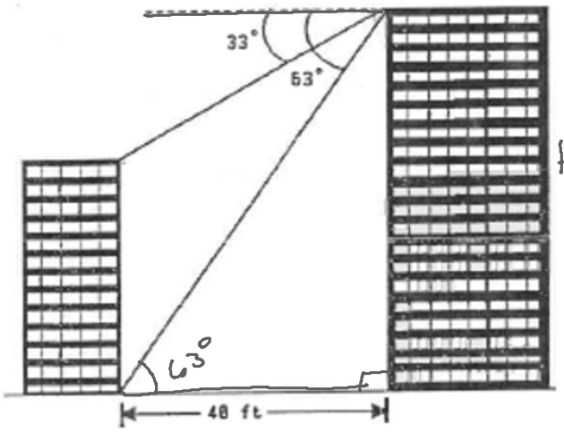
$x = 10\cos 20^\circ$

$= 9.3$ ft

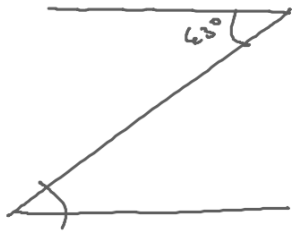
To measure the height of a mountain, a surveyor takes two sightings of the peak at a distance 900 meters apart on a direct line to the mountain. The first observer results in an angle of elevation of 47°, where as the second result has an angle of elevation of 35°. The transit sits 2 meter high, what is the height h of the moumtain?



The angle of depressioin from the top of one building to the foot of a building across the street is 63°. The angle of depression to the top of the same building 33°. The two buildings are 40 feet apart. What is the height of the shorter building



$H = 78.5$



$\tan 63° = \frac{H}{40}$

$H = 40 \tan 63°$

Nicole went for a walk in the city park. To cut across the rectangular park, she chose the path shown by the dotted line in the drawings below. At what angle, x, did Nicole cut across the park? Round to the nearest tenth of a degree