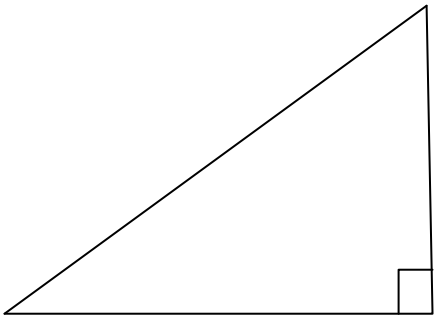
Chapter 7: Application of Trig. Functions

7.1 Solving Right Triangle



Ex: In the right triangle ABC with hypotenuse c , if $a=\sqrt{6}$, $\beta=30^o$. Find $b, c, and\ \alpha$.

Ex: In the right triangle ABC with hypotenuse c , if $b=3\sqrt{5}$, $c=2\sqrt{15}$. Find $a, \alpha, and\ \beta$.

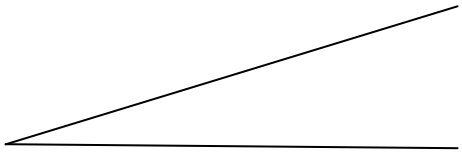
Ex: In the right triangle ABC with hypotenuse c , if $b=2$, $\alpha=40^o$. Find c.

Ex: In the right triangle ABC with hypotenuse $c=1$, and $a=x$. Find $\cos\alpha \cot\beta$.

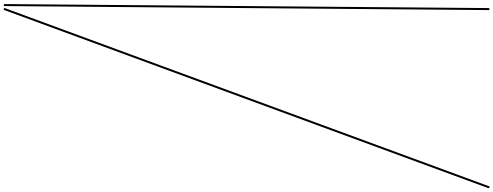
Ex: In the right triangle ABC with hypotenuse c , if $\alpha=20^o$ and one of the legs is 3 feet, find c.

Application:

1) Object above the horizontal line l



2) Object below the horizontal line l



EX:

1- From a point 15 meters above level ground, a surveyor measures the angle of depression of an object on the ground at 68°. Approximate the distance from the object to the point on the ground directly beneath the surveyor.

2- A ship, offshore from a vertical cliff known to be 100 feet in height, takes a sighting of the top of the cliff. If the angle of elevation is found to be 25°, how far offshore is the ship?

3- A 22-foot extension ladder leaning against a building makes a 70° angle with the ground. How far up the building does the ladder touch?

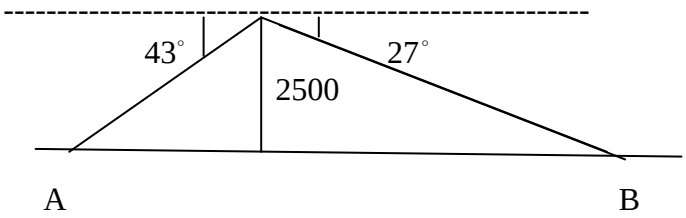
4- From the top of a 172 -foot - high water tank, the angle of depression to a house is 13°. How far away is the house from the water tank?

5- At 10 am on April 26, 1998, a building 300 feet high casts a shadow 50 feet long. What is the angle of elevation of the Sun.

6- A radio transmission tower is 172 feet high. How long should a guy wire be if it is attached to the tower 12 feet from the top and is to make an angle of 25^o with the ground.

7- A straight trial, with a uniform inclination of 32^o, leads from a hotel, whose elevation is 8,500 feet, to a mountain Lake at an elevation of 10,000 feet. What is the length of the trail?

8- Given the information and the picture below. Find the distance between A and B.



9- Given the information and the picture below. Find h , if the distance between A and B is 1000 meters.