



## MATHS

### BOOKS - TARGET PUBLICATION

### TRIGONOMETRY

#### Practice Set 6 1

1. If  $\sin \theta = \frac{7}{25}$  and  $\cos \theta = \frac{24}{25}$ , then find  $\tan \theta$ .



Watch Video Solution

2. If  $\tan \theta = 1$ , then  $\frac{\sin \theta + \cos \theta}{\sec \theta + \csc \theta} =$

A. 1

B.  $\frac{1}{2}$

C.  $\frac{\sqrt{3}}{2}$

D. 0

**Answer: B**



**View Text Solution**

**3. Prove that :**

$$\frac{\sin^2 \theta}{\cos \theta} + \cos \theta = \sec \theta$$



**Watch Video Solution**

4. Prove that:  $\sqrt{\frac{1 - \sin \theta}{1 + \sin \theta}} = \{\sec \theta - \tan \theta\}$ , if

$$-\frac{\pi}{2} < \theta < \frac{\pi}{2}$$

$$= -\sec \theta + \tan \theta, \text{ if } \frac{\pi}{2} < \theta < \frac{3\pi}{2}$$

 [Watch Video Solution](#)

5. prove that  $\cot \theta + \tan \theta = \operatorname{cosec} \theta \cdot \sec \theta$

 [Watch Video Solution](#)

6. Prove that

$$(i) \frac{\sin \theta}{(1 - \cos \theta)} = (\operatorname{cosec} \theta + \cot \theta)$$

$$(ii) \frac{1}{(\sec \theta - \tan \theta)} = (\sec \theta + \tan \theta)$$

 [Watch Video Solution](#)

7. Prove that  $\sin^4 \theta - \cos^4 \theta = 1 - 2 \cos^2 \theta$



Watch Video Solution

8. Prove that :

$$\sec \theta + \tan \theta = \frac{\cos \theta}{1 - \sin \theta} = \frac{1 + \sin \theta}{\cos \theta}$$

A.  $\frac{1}{1 + \sin \theta}$

B.  $\frac{1}{1 - \sin \theta}$

C.  $\frac{\cos \theta}{1 + \sin \theta}$

D.  $\frac{\cos \theta}{1 - \sin \theta}$

Answer: D



Watch Video Solution

9.  $\tan \theta + \frac{1}{\tan \theta} = 2$  then prove that  $\tan^2 \theta + \frac{1}{\tan^2 \theta} = 2$

 [Watch Video Solution](#)

10. Prove:  $\frac{\tan A}{(1 + \tan^2 A)^2} + \frac{\cot A}{(1 + \cot^2 A)^2} = \sin A \cos A$

 [Watch Video Solution](#)

11. prove that  $\sec^4 A (1 - \sin^4 A) - 2 \tan^2 A = 1$ .

 [Watch Video Solution](#)

12. prove that  $\frac{\tan \theta}{\sec \theta - 1} = \frac{\tan \theta + \sec \theta + 1}{\tan \theta + \sec \theta - 1}$

 [Watch Video Solution](#)

## Practice Set 6 2

1. Solve the following question:(1) A person is standing at a distance of 80 m from a church looking at its top. The angle of elevation is of  $45^\circ$ . Find the height of the church.

 [Watch Video Solution](#)

2. From the top of a lighthouse, an observer looking at a boat makes an angle of depression of  $60^\circ$ . If the height of the lighthouse is 90m, then find how far is the boat from the lighthouse.

$$(\sqrt{3} = 1.73)$$

 [Watch Video Solution](#)

3. Two buildings are facing each other on either side of a road of width 12m. From the top of the first building, which is 10 m high, the angle of elevation of the top of the second is  $60^\circ$ . What is the height of the second building?

 [Watch Video Solution](#)

4. Two poles of heights 18 metre and 7 metre are erected on a ground. The length of the wire fastened at their tops is 22 meters. Find the angle made by the wire with the horizontal.

 [Watch Video Solution](#)

5. A storm broke a tree and the treetop rested 20 m from the base of the tree, making an angle of  $60^\circ$  with the horizontal.

Find the height of the tree.

 [Watch Video Solution](#)

6. A kite is flying at a height of 60 m above the ground. The string attached to the kite is temporarily tied to a point on the ground. The inclination of the string with the ground is  $60^\circ$ . Find the length of the string, assuming that there is no sl

 [Watch Video Solution](#)



1.  $\sin \theta \cdot \cos ec \theta = ?$

A. 1

B. 0

C.  $\frac{1}{2}$

D.  $\sqrt{2}$

**Answer: A**



[Watch Video Solution](#)

2.  $\cos ec 45^\circ = \dots\dots$

A.  $\frac{1}{\sqrt{2}}$

B.  $\sqrt{2}$

C.  $\frac{\sqrt{3}}{2}$

D.  $\frac{2}{\sqrt{3}}$

**Answer: B**



**Watch Video Solution**

3. (3)  $1 + \tan^2 \theta = ?$

A.  $\cot^2 \theta$

B.  $\cos ec^2 \theta$

C.  $\sec^2 \theta$

D.  $\tan^2 \theta$

**Answer: C**



**Watch Video Solution**

4. What we see at a higher level from the horizontal line, angle formed is .....,

- A. angle of elevation
- B. angle of depression
- C. 0
- D. straight angle.

**Answer: A**



Watch Video Solution

5. If  $\sin \theta = 11/61$  find the values of  $\cos \theta$  using trigonometric identity.



[Watch Video Solution](#)

6. (1) If  $\tan \theta = 2$ , find the values of other trigonometric ratios using the identities.



[Watch Video Solution](#)

7. If  $\sec \theta = 13/12$ , find values of other trigonometric ratios.



[Watch Video Solution](#)

8. Prove that :

$$\sec \theta (1 - \sin \theta) (\sec \theta + \tan \theta) = 1$$



[Watch Video Solution](#)

9. Prove :  $(\sec \theta + \tan \theta)(1 - \sin \theta) = \cos \theta$ .



Watch Video Solution

10. Prove that :  $\sec^2 \theta + \operatorname{cosec}^2 \theta = \sec^2 \theta \cdot \operatorname{cosec}^2 \theta$



Watch Video Solution

11. Prove the following :  $\cot^2 \theta - \tan^2 \theta = \operatorname{cosec}^2 \theta - \sec^2 \theta$



Watch Video Solution

12. Prove that :

$$\tan^4 \theta + \tan^2 \theta = \sec^4 \theta - \sec^2 \theta$$



 [Watch Video Solution](#)

13. Prove  $\frac{1}{1 + \sin \theta} + \frac{1}{1 - \sin \theta} = 2 \sec^2 \theta$

 [Watch Video Solution](#)

14. Prove the following :  $\sec^6 x - \tan^6 x = 1 + 3 \sec^2 x \times \tan^2 x$

 [Watch Video Solution](#)

15. Prove the following :  $\frac{\tan \theta}{\sec \theta + 1} = \frac{\sec \theta - 1}{\tan \theta}$

 [Watch Video Solution](#)

**16.** Prove the following:

$$\frac{\tan^3 \theta - 1}{\tan \theta - 1} = \sec^2 \theta + \tan \theta$$

 [Watch Video Solution](#)

**17.** Prove that

$$\frac{\sin \theta - \cos \theta + 1}{\sin \theta + \cos \theta - 1} = \frac{1}{(\sec \theta - \tan \theta)}.$$

 [Watch Video Solution](#)

**18.** A boy standing at a distance of 48 meters from a building observes the top of the building and makes an angle of elevation of  $30^\circ$ . Find the height of the building.

 [Watch Video Solution](#)

**19.** From the top of a lighthouse, an observer looks at a ship and finds the angle of depression to be  $30^\circ$ . If the height of the lighthouse is 100 m, then find how far is that ship from the lighthouse.

 [Watch Video Solution](#)

**20.** Two buildings are in front of each other on a road of width 15 meters. From the top of the first building, having a height of 12 meters, the angle of elevation of the top of the second building is  $30^\circ$ . What is the height of the second building?

 [Watch Video Solution](#)



21. A ladder on the platform of a firebrigade van can be elevated at an angle of  $70^\circ$  to the maximum. The length of the ladder can be extended upto  $20m$ . If the platform is  $2m$  above the ground, find the maximum height from the ground upto which the ladder can reach ( $\sin 70^\circ = 0.94$ )

 [Watch Video Solution](#)

22. While landing at an airport, a pilot made an angle of depression of  $20^\circ$ . Average speed of the plane was  $200km/h$ . The plane reached the ground after 54 seconds. Find the height at which the plane was when it started landing.  
( $\sin 20^\circ = 0.342$ )

 [Watch Video Solution](#)

## Activities For Practice

1. If  $\sin \theta = 7/25$  then find  $\cos \theta$  and  $\tan \theta$ .

 [Watch Video Solution](#)

2. Solve the following question:(1) A person is standing at a distance of 80 m from a church looking at its top. The angle of elevation is of  $45^\circ$ . Find the height of the church.

 [Watch Video Solution](#)

3. Prove :  $(\sec \theta + \tan \theta)(1 - \sin \theta) = \cos \theta$ .

 [Watch Video Solution](#)

## Multiple Choice Questions

1.  $\cos \theta \cdot \sec \theta =$

A. 0

B.  $\frac{1}{2}$

C. 1

D.  $\sqrt{2}$

**Answer: C**



**Watch Video Solution**

2.  $\tan \theta \cdot \tan(90^\circ - \theta) =$

A. 0

B.  $\frac{1}{\sqrt{3}}$

C. 1

D.  $\sqrt{3}$

**Answer: C**



**Watch Video Solution**

**3.** Choose the correct answer in each of the following questions:

If  $\cos \theta = \frac{4}{5}$  then  $\tan \theta = ?$

A.  $\frac{3}{5}$

B.  $\frac{3}{4}$

C.  $\frac{4}{3}$

D.  $\frac{5}{3}$

**Answer: B**



**Watch Video Solution**

4. If  $\cot \theta = \frac{7}{8}$ , then  $\tan^2 \theta =$

A.  $\frac{7}{8}$

B.  $\frac{8}{7}$

C.  $\frac{49}{64}$

D.  $\frac{64}{49}$

**Answer: D**



**Watch Video Solution**

5. If  $\tan \theta = \frac{4}{3}$ , then  $3 \sin \theta - 4 \cos \theta =$

A. 0

B. 1

C.  $\frac{4}{5}$

D.  $\frac{3}{5}$

**Answer: A**



[Watch Video Solution](#)

6. Which of the following is the value of  $\sec 30^\circ$  ?

A.  $\sqrt{3}$

B.  $\frac{1}{\sqrt{3}}$

C.  $\frac{\sqrt{3}}{2}$

D.  $\frac{2}{\sqrt{3}}$

**Answer: D**



**Watch Video Solution**

7.  $\frac{2\tan 30^\circ}{1 + \tan^2 30^\circ} =$

A.  $\sin 30^\circ$

B.  $\sin 60^\circ$

C.  $\cos 60^\circ$

D.  $\tan 60^\circ$

**Answer: B**



**Watch Video Solution**

8.  $\frac{1 - \cot^2 45^\circ}{1 + \cot^2 45^\circ} =$

A.  $\cos 90^\circ$

B.  $\sin 90^\circ$

C.  $\sin 45^\circ$

D.  $\cos 45^\circ$

**Answer: A**



Watch Video Solution

9.  $1 + \cot^2 \theta = \dots$

A.  $\sec^2 \theta$



B.  $\cos^2 \theta$

C.  $\operatorname{cosec}^2 \theta$

D.  $\tan^2 \theta$

**Answer: C**



**Watch Video Solution**

10.  $\tan^2(90^\circ - \theta) - \operatorname{cosec}^2 \theta =$

A. 0

B. 1

C. -1

D. 2

**Answer: C**



**Watch Video Solution**

11. If  $\cos \theta = \frac{24}{25}$ , then the value of  $\sin \theta$  is

A.  $\frac{7}{24}$

B.  $\frac{7}{25}$

C.  $\frac{25}{7}$

D.  $\frac{24}{7}$

**Answer: B**



**Watch Video Solution**

12. If  $\tan \theta = \frac{3}{4}$ , then  $\cos^2 \theta - \sin^2 \theta = \frac{7}{25}$  (b) 1 (c)  $-\frac{7}{25}$

(d)  $\frac{4}{25}$

A.  $\frac{3}{25}$

B.  $\frac{4}{25}$

C.  $\frac{7}{25}$

D.  $\frac{9}{25}$

**Answer: C**



**Watch Video Solution**

13. If  $\cot \theta = \frac{3}{4}$ , then  $\frac{\sin \theta - \cos \theta}{\sin \theta + \cos \theta} =$

A.  $\frac{1}{7}$

B.  $\frac{2}{7}$

C.  $\frac{1}{4}$

D.  $\frac{3}{4}$

**Answer: A**



**Watch Video Solution**

14. Find the value of  $\frac{1 + \tan^2 \theta}{1 + \cot^2 \theta}$

A.  $\sec^2 \theta$

B.  $\cos^2 \theta$

C.  $\cos ec^2 \theta$

D.  $\tan^2 \theta$

**Answer: D**



**Watch Video Solution**

15.  $(1 - \cos^2 \theta) \cot^2 \theta$

A.  $\sec^2 \theta$

B.  $\cos^2 \theta$

C.  $\operatorname{cosec}^2 \theta$

D.  $\sin^2 \theta$

**Answer: B**



**Watch Video Solution**

16.  $(\sec^2 \theta - 1) (\operatorname{cosec}^2 \theta - 1) =$

A. 0

B. 1

C.  $2\sec^2 \theta$

D.  $2 \operatorname{cosec}^2 \theta$

**Answer: B**



[Watch Video Solution](#)

17. Write the value of  $\operatorname{cosec}^2 \theta (1 + \cos \theta)(1 - \cos \theta)$ .

A. 0

B. 1

C.  $\sec^2 \theta$

D.  $\sin^2 \theta$

**Answer: B**



**Watch Video Solution**

18.  $\frac{5}{\cot^2 \theta} - \frac{5}{\cos^2 \theta} =$

A. 5

B.  $\frac{1}{5}$

C. -5

D.  $-\frac{1}{5}$

**Answer: C**



**Watch Video Solution**

$$19. \frac{\sin \theta}{1 + \cos \theta} =$$

$$A. \frac{\cos \theta}{1 - \sin \theta}$$

$$B. \frac{1 - \cos \theta}{\sin \theta}$$

$$C. \frac{1 - \sin \theta}{\cos \theta}$$

$$D. \frac{1 - \cos \theta}{1 + \cos \theta}$$

**Answer: B**



**Watch Video Solution**

$$20. \text{ If } \operatorname{cosec} \theta - \cot \theta = \frac{1}{3}, \text{ then } \operatorname{cosec} \theta + \cot \theta =$$

A. 1



B. 2

C. 3

D. 4

**Answer: C**



**Watch Video Solution**

**21.** If  $\sin \theta + \sin^2 \theta = 1$  then  $\cos^2 \theta + \cos^4 \theta$  is equal to

A. 0

B. 1

C. -1

D. 2

**Answer: B**



**Watch Video Solution**

**22.** If  $\sin \theta + \cos \theta = m$  and  $\sin \theta - \cos \theta = n$ , then

A.  $m^2 + n^2 = 1$

B.  $m^2 - n^2 = 1$

C.  $m^2 + n^2 = 2$

D.  $m^2 - n^2 = 2$

**Answer: C**



**Watch Video Solution**

23. When we see below the horizontal line , then the angle formed is .....

- A. A Zero degree angle
- B. the angle of depression
- C. the angle of elevation
- D. a straight angle

**Answer: B**

 [Watch Video Solution](#)

24. If a pole 12 m high casts a shadow  $4\sqrt{3}m$  long on the ground then the sun's elevation is

A.  $30^\circ$

B.  $45^\circ$

C.  $60^\circ$

D.  $90^\circ$

**Answer: C**



[Watch Video Solution](#)

**25.** A kite is flying at a height 80 m above the ground . The string of the kite which is temporarily attached to the ground makes an angle  $45^\circ$  with the ground. If there is no slack in the string, then the length of the string is

A. 40 m

B.  $40\sqrt{2}$

C. 80 m

D.  $80\sqrt{2}$

**Answer: D**



[Watch Video Solution](#)

**26.** The angle of elevation of top of the tower from a point P on the ground is  $30^\circ$ . If the points is 45 m away from the foot of the tower, then the height of the tower is

A. 45 m

B. 15 m

C.  $15\sqrt{3}$

D.  $20\sqrt{3}m$

**Answer: C**



**Watch Video Solution**

**27.** The angle of depression of a ship as observed from the top of a lighthouse is  $45^\circ$  . If the height of the lighthouse is 200 m , then what is the distance of the ship from the foot of the lighthouse ?

A. 200 m

B. 400 m

C. 100 m

D.  $200\sqrt{3}m$

**Answer: A**



**Watch Video Solution**

## Additional Problems For Practice Based On Practice Set 6 1

1. If  $\sin \theta = \frac{20}{29}$ , then find the value of  $\cos \theta$ .



**Watch Video Solution**

2. If  $\sin \theta = \frac{8}{17}$ , where  $\theta$  is an acute angle, find the value of  $\cos \theta$  by using identities.



**Watch Video Solution**

3. If  $\cos \theta = \frac{3}{5}$ , where ' $\theta$ ' is an acute angle. Find the value of  $\sin \theta$ .

 [Watch Video Solution](#)

4. If  $\sec \theta = \frac{25}{7}$  then find the value of  $\tan \theta$ .

 [Watch Video Solution](#)

5. If  $\cot \theta = \frac{8}{15}$  then find the values of  $\sin \theta$  and  $\sec \theta$ .

 [Watch Video Solution](#)



6. If  $\sin \theta = \frac{5}{13}$ , where  $\theta$  is an acute angle, find the values of other trigonometric ratios using identities.

 [Watch Video Solution](#)

7. If  $\tan \theta = \frac{20}{21}$ , then find the values of other trigonometric ratios.

 [Watch Video Solution](#)

8. If  $5 \sin \theta - 12 \cos \theta = 0$ , find the values of  $\sec \theta$  and  $\operatorname{cosec} \theta$ .

 [Watch Video Solution](#)

9. If  $3 \sin \theta - 4 \cos \theta = 0$  , then find the values of  $\tan \theta$ ,  $\sec \theta$  and  $\operatorname{cosec} \theta$  .

 [Watch Video Solution](#)

10. If  $\cos \theta = \frac{\sqrt{3}}{2}$  then find the value of  $\frac{1 - \sec \theta}{1 + \operatorname{cosec} \theta}$

 [Watch Video Solution](#)

11. If  $\sin \theta = \frac{4}{5}$  , find the value of  $\frac{4 \tan \theta - 5 \cos \theta}{\sec \theta + 4 \cot \theta}$

 [Watch Video Solution](#)

12. Prove that :

$$\frac{\sin \theta}{1 - \cos \theta} = \operatorname{cosec} \theta + \cot \theta$$



Watch Video Solution

13. Prove that :

$$\tan \theta - \cot \theta = \frac{2 \sin^2 \theta - 1}{\sin \theta \cos \theta}$$



Watch Video Solution

14. Prove that :  $\sqrt{\frac{1 + \cos \theta}{1 - \cos \theta}} = \sec \theta + \cot \theta$



Watch Video Solution

15. Prove the trigonometric identities:

$$\sqrt{\frac{1 - \cos \theta}{1 + \cos \theta}} = \sec \theta - \cot \theta$$



Watch Video Solution

16. Prove that  $\sec x + \tan x = \sqrt{\frac{1 + \sin x}{1 - \sin x}}$

 [Watch Video Solution](#)

17. Prove that :

$$\sec^2 \theta - \cos^2 \theta = \sin^2 \theta (\sec^2 \theta + 1)$$

 [Watch Video Solution](#)

18. Prove that :

$$\cos^4 \theta - \cos^2 \theta = \sin^4 \theta - \sin^2 \theta$$

 [Watch Video Solution](#)

19. Prove that  $\sin^6 \theta + \cos^6 \theta = 1 - 3 \sin^2 \theta \cos^2 \theta$

 [Watch Video Solution](#)

20. Prove that :

$$\sin^4 \theta + \cos^4 \theta = 1 - 2 \cos^2 \theta + 2 \cos^4 \theta$$

 [Watch Video Solution](#)

21.  $\frac{\tan \theta}{1 - \cot \theta} + \frac{\cot \theta}{1 - \tan \theta} = 1 + \sec \theta \cos ec \theta$

 [Watch Video Solution](#)

22.  $\frac{\tan \theta}{1 - \cot \theta} + \frac{\cot \theta}{1 - \tan \theta} = 1 + \sec \theta \cos ec \theta$

 [Watch Video Solution](#)

 Watch Video Solution

23. Prove that

$$\frac{\cot \theta + \operatorname{cosec} \theta - 1}{\cot \theta - \operatorname{cosec} \theta + 1} = \frac{1 + \cos \theta}{\sin \theta}.$$

 Watch Video Solution

24. Eliminate  $\alpha$ , if  $x = r \cos \alpha$ ,  $y = r \sin \alpha$ .

 Watch Video Solution

25. Eliminate  $\theta$  from the equation

$$a = x \sec \theta \text{ and } b = y \tan \theta.$$

 Watch Video Solution

26. Eliminate  $\theta$  if  $x = a \cot \theta + b \operatorname{cosec} \theta$

and  $y = a \operatorname{cosec} \theta + b \cot \theta$ .



Watch Video Solution

### Based On Practice Set 6 2

1. An observer at a distance of 10 m from a tree looks at the top of the tree, the angle of elevation is  $60^\circ$ .

What is the height of the tree? ( $\sqrt{3} = 1.73$ )



Watch Video Solution

2. From the top of a building, an observer is looking at a scooter

parked at some distance away , makes an angle of depression of  $30^\circ$  . If the height of the building is 40 m , find how far the scooter is from the building. ( $\sqrt{3} = 1.73$ )



[Watch Video Solution](#)

3. (8) From the top of a lighthouse, an observer looks at a ship and finds the angle of depression to be  $60^\circ$  . If the lighthouse is 90 m, then find how far is that ship from the lighthouse? ( $\sqrt{3} = 1.73$ )



[Watch Video Solution](#)

4. A person observed the angle of elevation of the top of a tower as  $30^\circ$  . He walked 50m towards the foot of the tower along level ground and found the angle of elevation of the



top

of the tower as  $60^\circ$ . Find the height of the tower.



[Watch Video Solution](#)

5. A person standing on the bank of a river observes that the angle of elevation of the top of a tree standing on the opposite bank is  $60^\circ$ . When he moves 40 m away from the bank, he finds the angle of elevation to be  $30^\circ$ . Find the height of the tree and the width of the river. ( $\sqrt{3} = 1.73$ )



[Watch Video Solution](#)

6. To find the width the river, a man observes the top of a tower on the opposite bank making an angle of elevation  $61^\circ$ . When he

moves  $50\text{m}$  backward from bank and observes the same top of the

tower, his line of vision makes an angle of elevation of  $35^\circ$ .

Find the height of the tower and width of the river.

( $\tan 61^\circ = 1.8$ ,  $\tan 35^\circ = 0.7$ )



[Watch Video Solution](#)

7. Two buildings are in front of each other on either side of a road of width 10 metres. From the top of the first building which

is 30 metres high, the angle of elevation to the top of the second

is  $45^\circ$ . What is the height of the second building?



[Watch Video Solution](#)

8. The horizontal distance between two poles is 15m. The angle of depression of the top of the first pole as seen from the top of the second pole is  $30^\circ$ . If the height of the second pole is 24 m, find the height of the first pole. ( $\sqrt{3} = 1.732$ )

 [Watch Video Solution](#)

9. Roshani saw an eagle on the top of a tree at an angle of elevation of  $61^\circ$ , while she was standing at the door of her house. She went on the terrace of the house so that she could see it clearly. The terrace was at a height of 4m. While observing the eagle from there the angle of elevation was  $52^\circ$ . At what height from the ground was the eagle?

$\tan 61^\circ = 1.8$ ,  $\tan 52^\circ = 1.28$ ,  $\tan 29^\circ = 0.55$ ,  $\tan 38^\circ = 0.78$ )

 [Watch Video Solution](#)

10. From the top of a building 60m high the angles of depression of the top and the bottom of a tower are observed to be  $30^\circ$  and  $60^\circ$ . Find the height of the tower.



[Watch Video Solution](#)

11. A ship of height 24 m is sighted from a lighthouse. From the top of the lighthouse the angle of depression to the top of the mast and base of the ship is  $30^\circ$  and  $45^\circ$  respectively. How far is the ship from the lighthouse? ( $\sqrt{3} = 1.73$ )



[Watch Video Solution](#)

12. A tree breaks due to storm and the broken part bends so that the top of the tree touches the ground making an angle of  $30^\circ$  with the ground.

The distance between the foot of the tree to the point where the top touches the ground is 10m. Find the height of the tree.

 [Watch Video Solution](#)

13. A tree is broken by the wind. The top of that tree struck the ground at an angle of  $30^\circ$  and at a distance of 30 m from the root. Find the height of the whole tree. ( $\sqrt{3} = 1.73$ )

 [Watch Video Solution](#)

## Chapter Assessment

1.  $\cot 60^\circ =$

A.  $\sqrt{3}$

B.  $\frac{1}{\sqrt{3}}$

C.  $\sqrt{2}$

D.  $\frac{1}{\sqrt{2}}$

**Answer: B**



**Watch Video Solution**

2.  $\tan \theta \cdot \cot \theta =$

A. 0

B.  $\sqrt{3}$

C.  $\frac{1}{\sqrt{3}}$

D. 1

**Answer: D**



**Watch Video Solution**

3. When we see at a lower level , from the horizontal line ,  
angle formed is .....

A. angle of elevation

B. angle of depression

C. 0

D. straight angle.

**Answer: B**



[Watch Video Solution](#)

4. If the distance of a point from the tower is equal to the height of the tower , then find the angle of elevation of the top of the tower from that point .



[Watch Video Solution](#)

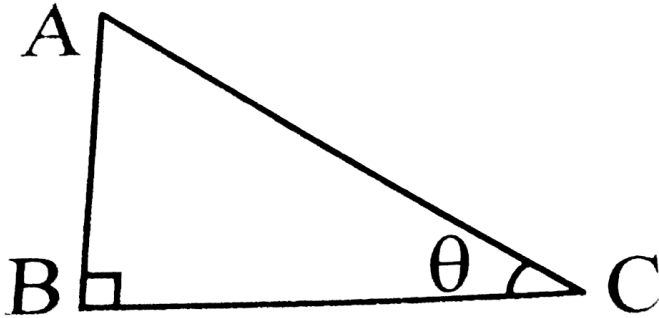
5. If  $\operatorname{cosec} \theta = \frac{13}{12}$  , then find the values of  $\cot \theta$  and  $\sin \theta$ .



[Watch Video Solution](#)



6. Prove the identity  $\sin^2 \theta + \cos^2 \theta = 1$  with the help of given figure .



[▶ Watch Video Solution](#)

7. A person standing at a distance of 90 m from a church observes the angle of elevation of its top to be  $45^\circ$  . Find the height of the church .

[▶ Watch Video Solution](#)

8. 
$$\frac{\tan \theta + \sin \theta}{\tan \theta - \sin \theta} = \frac{\sec \theta + 1}{\sec \theta - 1}$$



Watch Video Solution

9. If  $\cos \theta + \frac{1}{\cos \theta} = 4$  , then prove that

$$\cos^2 \theta + \frac{1}{\cos^2 \theta} = 14.$$



Watch Video Solution

10. Prove that :

$$\sec^6 x - \tan^6 x = 1 + 3 \sec^2 x \times \tan^2 x$$



Watch Video Solution

**11.** A tree breaks due to storm and the broken part bends, so that the top of the tree touches the ground making an angle of  $60^\circ$  with the ground . The distance from the foot of the tree to the point where the top touches the ground is 5 metres . Find the height of the tree. ( $\sqrt{3} = 1.73$ )



[Watch Video Solution](#)

**12.** Two buildings are in front of each other on a road of width 15 metres. From the top of the first building , having a height of 12 metre , the angle of elevation of the top of the second building is  $30^\circ$  . What is the height of the second building ?



[Watch Video Solution](#)

13. If  $\tan \theta = 1$  then find the value of  $\frac{\sin \theta + \cos \theta}{\sec \theta + \csc \theta}$



[Watch Video Solution](#)

14. A straight highway leads to the foot of a tower. A man standing at the top of the tower observes a car at an angle of depression of  $30^\circ$ , which is approaching the foot of the tower with a uniform speed. Six seconds later, the angle of depression of the car is found to be  $60^\circ$ . Find the time taken by the car to reach the foot of the tower from this point.



[Watch Video Solution](#)

15. If  $\sec \theta + \tan \theta = p$  then prove that  $\frac{p^2 - 1}{p^2 + 1} = \sin \theta$

 [Watch Video Solution](#)

16. If  $3 \tan^2 \theta - 4\sqrt{3} \tan \theta + 3 = 0$ , find the acute angle  $\theta$ .

 [Watch Video Solution](#)

17. Eliminate  $\theta$  if  $x = a \cot \theta - b \operatorname{cosec} \theta$  and  $y = a \cot \theta + b \operatorname{cosec} \theta$ .

 [Watch Video Solution](#)