



## MATHS

### BOOKS - MBD

## INTRODUCTION TO TRIGONOMETRY

### Example

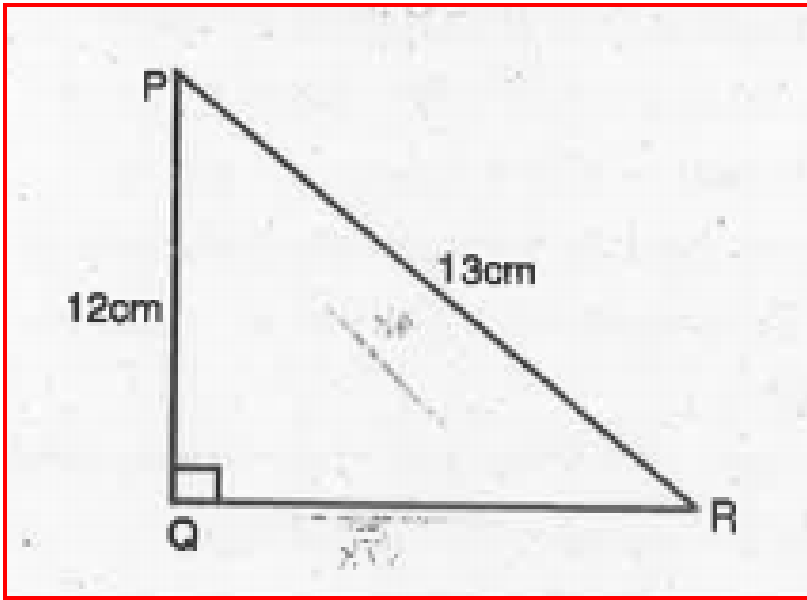
1. In  $\triangle ABC$ , right angled at B,  $AB = 24$  cm , $BC = 7$  cm. Determine :-  $\sin A$ ,  
 $\cos A$ .

 [Watch Video Solution](#)

2. In  $\triangle ABC$ , right angled at B,  $AB = 24$  cm , $BC = 7$  cm. Determine :-  $\sin C$ ,  
 $\cos C$ .

 [Watch Video Solution](#)

3. In fig., find  $\tan P - \cot R$ .



[▶ Watch Video Solution](#)

4. If  $\sin A = \frac{3}{4}$  calculate  $\cos A$  and  $\tan A$ .

[▶ Watch Video Solution](#)

5. Given  $15 \cot A = 8$ , find  $\sin A$  and  $\sec A$ .

 [Watch Video Solution](#)

6. Given  $\sec \theta = \frac{13}{2}$ , calculate all other trigonometric ratios.

 [Watch Video Solution](#)

7. If  $\angle A$  and  $\angle B$  are acute angles such that  $\cos A = \cos B$ , show that  $\angle A = \angle B$ .

 [Watch Video Solution](#)

8. If  $\cot \theta = \frac{7}{8}$  evaluate  $:- \frac{(1 + \sin \theta)(1 - \sin \theta)}{(1 + \cos \theta)(1 - \cos \theta)}$ .

 [Watch Video Solution](#)

9. If  $\cot \theta = \frac{7}{8}$  evaluate  $:- \cot^2 \theta$ .

 [Watch Video Solution](#)

10. If  $3\cot A=4$ , check whether  $\frac{1-\tan^2 A}{1+\tan^2 A} = \cos^2 A - \sin^2 A$  or not

 [Watch Video Solution](#)

11. In triangle ABC, right angled at B, if  $\tan A = \frac{1}{\sqrt{3}}$ . Find the value of  $-\sin A \cos C + \cos A \sin C$ .

 [Watch Video Solution](#)

12. In triangle ABC, right angled at B, if  $\tan A = \frac{1}{\sqrt{3}}$ . Find the value of  $-\cos A \cos C - \sin A \sin C$ .

 [Watch Video Solution](#)

13. In  $\triangle PQR$ , right angled at Q,  $PR + QR = 25$  cm and  $PQ = 5$  cm.

Determine the values of  $\sin P$ ,  $\cos P$  and  $\tan P$ .



[Watch Video Solution](#)

14. State whether the following are true or false. Justify your answer. :- The value of  $\tan A$  is always less than 1.



[Watch Video Solution](#)

15. State whether the following are true or false. Justify your answer. :-  $\sec A = \frac{12}{5}$  for some value of angle A.



[Watch Video Solution](#)

16. State whether the following are true or false. Justify your answer. :-  $\cos A$  is abbreviation used for cosecant of angle A.



Watch Video Solution

17. State whether the following are true or false. Justify your answer. :-  $\cot A$  is product of  $\cot A$  and  $A$ .



Watch Video Solution

18. State whether the following are true or false. Justify your answer. :-  $\sin \theta = \frac{4}{3}$  for some angle  $\theta$ .

$$\sin \theta = \frac{4}{3} \text{ for some angle } \theta.$$



Watch Video Solution

19. Choose the correct option and justify your choice.:-  $\frac{2 \tan 30^\circ}{1 + \tan^2 30^\circ}$ .

A. a.  $\sin 60^\circ$

B. b.  $\cos 60^\circ$

C. c.  $\tan 60^\circ$

D. d.  $\sin 30^\circ$

**Answer:**



**Watch Video Solution**

20. Choose the correct option and justify your choice:  $\frac{1 - \tan^2 45^\circ}{1 - \tan 45^\circ}$

A. a.  $\tan 90^\circ$

B. b. 1

C. c.  $\sin 45^\circ$

D. d. 0

**Answer:**



**Watch Video Solution**

21. Choose the correct option and justify your choice:-  $\sin 2A = 2 \sin A$  is true when A

A.  $0^\circ$

B.  $30^\circ$

C.  $45^\circ$

D.  $60^\circ$

**Answer:**



[Watch Video Solution](#)

22. Choose the correct option and justify your choice:-  $\frac{2 \tan 30^\circ}{1 - \tan^2 30^\circ}$  .

A.  $a \cos 60^\circ$

B.  $b \sin 60^\circ$

C.  $c \tan 60^\circ$



D.  $d \sin 30^\circ$

**Answer:**

 [Watch Video Solution](#)

23. If  $\tan(A+B)=\sqrt{3}$  and  $\tan(A-B)=\frac{1}{\sqrt{3}}$ ,  $0^\circ < A + B \leq 90^\circ$ ,  $A > B$ , find A and B .

 [Watch Video Solution](#)

24. State whether the following are true or false. Justify your answer. :-  $\sin(A+B)=\sin A+\sin B$ .

 [Watch Video Solution](#)

25. State whether the following are true or false. Justify your answer. :- The value of  $\sin q$  increases as  $q$  increases.

 [Watch Video Solution](#)

26. State whether the following are true or false. Justify your answer. :- The value of  $\cos q$  increases as  $q$  increases.

 [Watch Video Solution](#)

27. State whether the following are true or false. Justify your answer. :-  $\sin q = \cos q$  for all value of  $q$ .

 [Watch Video Solution](#)

28. State whether the following are true or false. Justify your answer. :-  $\cot A$  is not defined for  $A = 0^\circ$ .

 [Watch Video Solution](#)

29. Evaluate :  $\frac{\sin 18^\circ}{\cos 72^\circ}$  .

 [Watch Video Solution](#)

30. Evaluate :  $\frac{\tan 26^\circ}{\cot 64^\circ}$  .

 [Watch Video Solution](#)

31. Evaluate :  $\cos 48^\circ - \sin 42^\circ$  .

 [Watch Video Solution](#)

32. Evaluate :  $\operatorname{cosec}31^\circ - \sec 59^\circ$  .

 [Watch Video Solution](#)

33. Show that :  $\tan 48^\circ \tan 23^\circ \tan 42^\circ \tan 67^\circ = 1$  .



[Watch Video Solution](#)

34. Show that :  $\cos 38^\circ \cos 52^\circ - \sin 38^\circ \sin 52^\circ = 0$  .



[Watch Video Solution](#)

35. If  $\tan 2A = \cot (A - 18^\circ)$  where  $2A$  is an acute angle, find the value of  $A$ .



[Watch Video Solution](#)

36. If  $\tan A = \cot B$ , prove that  $A + B = 90^\circ$  .



[Watch Video Solution](#)

37. If  $\sec 4A = \operatorname{cosec} (A - 20^\circ)$ , where  $4A$  is an acute angle, find the value of  $A$ .



[Watch Video Solution](#)

38. If A, B and C interior angles of a triangle ABC, then show that :

$$\sin\left(\frac{B + C}{2}\right) = \cos\left(\frac{A}{2}\right).$$

 [Watch Video Solution](#)

39. Express  $\sin 67^\circ + \cos 75^\circ$  in terms of Trigonometric ratios of angles between  $0^\circ$  and  $45^\circ$ .

 [Watch Video Solution](#)

40. Express the trigonometric ratios of  $\sin A$ ,  $\sec A$  and  $\tan A$  in terms of  $\cot A$ .

 [Watch Video Solution](#)

41. Write all the other trigonometric ratios of  $\angle A$  in terms of  $\sec A$ .



Watch Video Solution

42. Evaluate :-  $\frac{\sin^2 63^\circ + \sin^2 27^\circ}{\cos^2 17^\circ + \cos^2 73^\circ}$  .



Watch Video Solution

43. Evaluate :-  $\sin 25^\circ \cos 65^\circ + \cos 25^\circ \sin 65^\circ$  .



Watch Video Solution

44. Choose the correct option. Justify your choice :

$$9 \sec^2 A - 9 \tan^2 A = \text{a. } 1 \text{ b. } 9 \text{ c. } 8 \text{ d. } 0$$

A. 1

B. 9

C. 8

D. 0

**Answer:**



[Watch Video Solution](#)

**45.** Choose the correct option. Justify your choice :

$$(1 + \tan \theta + \sec \theta)(1 + \cot \theta - \operatorname{cosec} \theta)$$

A. 0

B. 1

C. 2

D. -1

**Answer:**



[Watch Video Solution](#)

**46.** Choose the correct option. Justify your choice :  $(\sec A + \tan A)(1 - \sin A)$

= ? a.  $\sec A$  b.  $\sin A$  c.  $\operatorname{cosec} A$  d.  $\cos A$

A.  $\sec A$

B.  $\sin A$

C.  $\operatorname{cosec} A$

D.  $\cos A$

**Answer:**



**Watch Video Solution**

47. Choose the correct option. Justify your choice :  $\frac{1 + \tan^2 A}{1 + \cot^2 A}$  a.  $\sec^2 A$

b. -1 c.  $\cot^2 A$  d.  $\tan^2 A$

A.  $\sec^2 A$

B. -1

C.  $\cot^2 A$

D.  $\tan^2 A$

**Answer:**





Watch Video Solution

48. Prove the following identities, where the angles involved are acute angles for which the expressions are defined. :

$$(\operatorname{cosec} \theta - \cot \theta)^2 = \frac{1 - \cos \theta}{1 + \cos \theta} .$$



Watch Video Solution

49. Prove the following identities, where the angles involved are acute angles for which the expressions are defined. :

$$\frac{\cos A}{1 + \sin A} + \frac{1 + \sin A}{\cos A} = 2 \sec A .$$



Watch Video Solution

50. Prove the following identities, where the angles involved are acute angles for which the expressions are defined. :

$$\frac{\tan \theta}{1 - \cot \theta} + \frac{\cot \theta}{1 - \tan \theta} = 1 + \sec \theta \operatorname{cosec} \theta .$$



Watch Video Solution

 Watch Video Solution

51. Prove the following identities, where the angles involved are acute angles for which the expressions are defined. :  $\frac{1 + \sec A}{\sec A} = \frac{\sin^2 A}{1 - \cos A}$  .

 Watch Video Solution

52. Prove the following identities, where the angles involved are acute angles for which the expressions are defined. :  $\frac{\cos A - \sin A + 1}{\cos A + \sin A - 1} = \sec A + \cot A$ , using the identity  $\sec^2 A = 1 + \cot^2 A$

 Watch Video Solution

53. Prove the following identities, where the angles involved are acute angles for which the expressions are defined. :  $\sqrt{\frac{1 + \sin A}{1 - \sin A}} = \sec A + \tan A$  .

 Watch Video Solution

54. Prove the following identities, where the angles involved are acute angles for which the expressions are defined. :  $\frac{\sin \theta - 2 \sin^3 \theta}{2 \cos^3 \theta - \cos \theta} = \tan \theta$ .

 Watch Video Solution

55. Prove the following identities, where the angles involved are acute angles for which the expressions are defined. :  $(\sin A + \operatorname{cosec} A)^2 + (\cos A + \sec A)^2 = 7 + \tan^2 A + \cot^2 A$ .

 Watch Video Solution

56. Prove the following identities, where the angles involved are acute angles for which the expressions are defined. :  $(\operatorname{cosec} A - \sin A)(\sec A - \cos A) = \sin A \cos A$

 Watch Video Solution

57. Prove the following identities, where the angles involved are acute angles for which the expressions are defined. :

$$\left( \frac{1 + \tan^2 A}{1 + \cot^2 A} \right) = \left( \frac{1 - \tan A}{1 - \cot A} \right)^2 = \tan^2 A .$$

 [Watch Video Solution](#)

58. The hypotenuse is the..... Side in right triangle.

 [Watch Video Solution](#)

59. The value of  $\tan A$  can not be greater than 1.

 [Watch Video Solution](#)

60.  $\sin^2 \theta + \cos^2 \theta = 1 .$

 [Watch Video Solution](#)

61. Value of  $\tan A$  is always less than 1.

 [Watch Video Solution](#)

62.  $\cos(90^\circ - \theta) = \sin \theta$ .

 [Watch Video Solution](#)

63.  $\sin(A + B) = \sin A + \sin B$ .

 [Watch Video Solution](#)

64.  $\sin 30^\circ = \dots\dots\dots$ .

 [Watch Video Solution](#)

65.  $\cos 30^\circ = \dots\dots\dots$ .



Watch Video Solution

66. .... -  $\cot^2 \theta = 1$  . Fill the blank.



Watch Video Solution

67.  $\sin^2 \theta + \dots = 1$  . Fill in the blank.



Watch Video Solution

68.  $\sec^2 \theta - \dots = 1$  . Fill in the blank.



Watch Video Solution

69. Evaluate :  $\cos 59^\circ - \sec 31^\circ$  .



Watch Video Solution

70. Evaluate :  $\cos 48^\circ - \sin 42^\circ$  .

 [Watch Video Solution](#)

71. Evaluate :  $\tan 59^\circ - \cot 31^\circ$  .

 [Watch Video Solution](#)

72. What is the value of  $\frac{\sin 16^\circ}{\cos 74^\circ}$  .

 [Watch Video Solution](#)

73. What is the value of  $\frac{\sin 18^\circ}{\cos 72^\circ}$  .

 [Watch Video Solution](#)

74. What is the value of  $\frac{\sin 14^\circ}{\cos 76^\circ}$  .



Watch Video Solution

75. If  $\tan A = \cot B$ , prove that  $A + B = 90^\circ$ .



Watch Video Solution

76. Evaluate :  $\frac{\tan 65^\circ}{\cot 25^\circ}$ .



Watch Video Solution

## Exercise

1. In  $\triangle ABC$ , right angled at A, if  $AB = 12$  cm,  $AC = 5$  cm and  $BC = 13$  cm, find all the six trigonometric ratios of angle B.



Watch Video Solution



2. In  $\triangle OPQ$ , right angled at P,  $OP = 7$  cm and  $OQ - PQ = 1$  cm. Determine the values of  $\sin \theta$  and  $\cos \theta$ .

 [Watch Video Solution](#)

3. If  $\sin \theta = \sqrt{3} \cos \theta$ , find all the six T-ratios..

 [Watch Video Solution](#)

4. If  $\sin A = \frac{1}{3}$  evaluate the  $\cos A \operatorname{cosec} A + \tan A \sec A$ .

 [Watch Video Solution](#)

5. If  $\tan \theta = \frac{12}{5}$ , calculate  $\sin \theta$ ,  $\cos \theta$  and verify  $\sin^2 \theta + \cos^2 \theta$ .

 [Watch Video Solution](#)

6. If  $\tan A = \sqrt{2} - 1$  show that  $\frac{\tan A}{1 + \tan^2 A} = \frac{\sqrt{2}}{4} = \sin A \cos A$ .

 [Watch Video Solution](#)

7. If  $\sec \theta = \frac{5}{4}$  verify that  $\frac{\tan \theta}{1 + \tan^2 \theta} = \frac{\sin \theta}{\sec \theta}$ .

 [Watch Video Solution](#)

8. If  $\sin B = \frac{1}{2}$  find the value of  $3 \cos B - 4 \cos^3 B$ .

 [Watch Video Solution](#)

9. In a right angled triangle ABC, right angled at B, if  $\tan A = 1$ , then verify that  $2 \sin A \cos A = 1$ .

 [Watch Video Solution](#)

10. If  $\cot \theta = \frac{3}{4}$  prove that  $\sqrt{\frac{\sec \theta - \operatorname{cosec} \theta}{\sec \theta + \operatorname{cosec} \theta}} = \frac{1}{\sqrt{7}}$ .

 [Watch Video Solution](#)

11. If  $\tan \theta = \frac{3}{4}$ , show that  $\sqrt{\frac{1 - \sin \theta}{1 + \sin \theta}} = \frac{1}{2}$ .

 [Watch Video Solution](#)

12. In  $\triangle ABC$ , right angle at C, if  $\tan A = \frac{1}{\sqrt{3}}$ . Show that  $\sin A \cos B - \cos A \sin B = -\frac{1}{2}$ .

 [Watch Video Solution](#)

13. If  $\operatorname{cosec} A = 2$ , find the value of  $\frac{1}{\tan A} + \frac{\sin A}{1 + \cos A}$ .

 [Watch Video Solution](#)

14. If  $\cot B = \frac{12}{5}$  Prove that  $\tan^2 B - \sin^2 B = \sin^4 B \cdot \sec^2 B$ .

 [Watch Video Solution](#)

15. If  $\tan \theta + \frac{1}{\tan \theta} = 2$ , find the value of  $\tan^2 \theta + \frac{1}{\tan^2 \theta}$ .

 [Watch Video Solution](#)

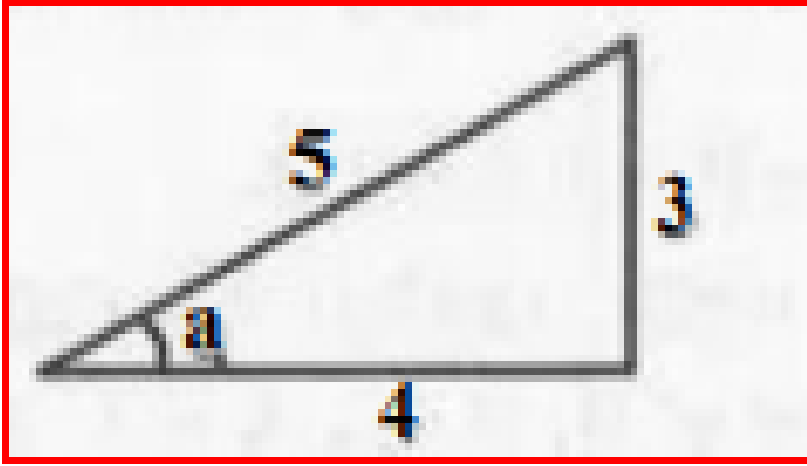
16. If  $3\cos \theta - 4\sin \theta = 2\cos \theta + \sin \theta$  find  $\tan \theta$ .

 [Watch Video Solution](#)

17. If  $\sin \theta = \frac{3}{5}$ , evaluate  $\left[ \frac{\cos \theta - \left( \frac{1}{\tan \theta} \right)}{2 \cot \theta} \right]$ .

 [Watch Video Solution](#)

18. What is the value of  $\sin a$  .



[▶ Watch Video Solution](#)

19. If  $A=30^\circ$  verify that  $\therefore \cos 2A = \frac{1 - \tan^2 A}{1 + \tan^2 A}$  .

[▶ Watch Video Solution](#)

20. If  $A=30^\circ$  verify that  $\therefore \cos 2A = \cos^2 A - \sin^2 A$  .

[▶ Watch Video Solution](#)

21. If  $A=30^\circ$  verify that  $\therefore \cos 2A=1-2 \sin^2 A$ .

 [Watch Video Solution](#)

22. If  $A=30^\circ$  verify that  $\therefore \cos 2A= 2\cos^2 A-1$ .

 [Watch Video Solution](#)

23. If  $A=30^\circ$  verify that  $\therefore \sin 3A=3\sin A-4 \sin^3 A$ .

 [Watch Video Solution](#)

24. If  $A=30^\circ$  verify that  $\therefore \cos 3A=4\cos^3 A-3\cos A$ .

 [Watch Video Solution](#)

25. If  $A=30^\circ$  verify that  $\therefore \tan A=\sqrt{\frac{1-\cos^2 A}{\cos^2 A}}$ .



[Watch Video Solution](#)

26. If  $A=30^\circ$  verify that :-  $\sin A = \frac{\tan A}{\sqrt{1 + \tan^2 A}}$ .



[Watch Video Solution](#)

27. Evaluate :-  $2 \sin^2 60^\circ + \cot^2 30^\circ - \tan 45^\circ$ .



[Watch Video Solution](#)

28. Evaluate :-  $\frac{5 \sin^2 30^\circ + \cos^2 45^\circ + 4 \tan^2 45^\circ}{2 \sin 30^\circ \cos 60^\circ + \tan 45^\circ}$ .



[Watch Video Solution](#)

29. Evaluate :-  $\frac{\tan 60^\circ}{\sec 60^\circ + \csc 60^\circ}$ .



[Watch Video Solution](#)

30. Evaluate :-  $\sin^2 30^\circ \cos^2 45^\circ + 4 \tan^2 30^\circ + \frac{1}{2} \sin^2 90^\circ + \frac{1}{8} \cot^2 90^\circ$  .

 [Watch Video Solution](#)

31. If  $\sin (A + B) = 1$  and  $\cos (A - B) = \frac{\sqrt{3}}{2}$  .Find A and B.

 [Watch Video Solution](#)

32. If  $\sin (A - B) = \frac{1}{2}$  ,  $\cos(A + B) = \frac{1}{2}$  . Find A and B.

 [Watch Video Solution](#)

33. If  $\cos (A + B) = 0$  and  $\sin(A - B) = \frac{1}{2}$  . Find A and B .

 [Watch Video Solution](#)

34. If  $3 \tan 2\theta = \sqrt{3}$  find  $\theta$  .





Watch Video Solution

35. Find  $x$ , if  $2\cos^2 30^\circ + x \sin^2 60^\circ - \frac{3}{4}\tan^2 30^\circ = 10$ .



Watch Video Solution

36. Given that  $\cos(A + B) = \cos A \cos B - \sin A \sin B$ . Find the value of  $\cos 105^\circ$ .



Watch Video Solution

37. Find  $x$  if  $:- \cos(10^\circ + x) = \frac{1}{2}$ .



Watch Video Solution

38. Find  $x$  if  $:- \tan(40^\circ + x) = \sqrt{3}$ .



Watch Video Solution

39. Find  $x$  if  $:- \sin(20^\circ + x) = \cos 60^\circ$  .

 [Watch Video Solution](#)

40. Find  $x$  if  $:-$  if  $\cos(40+x)=\sin 30^\circ$  . Find the value of  $x$ .

 [Watch Video Solution](#)

41. Show that  $:-$

$$2[\cos^4 60^\circ + \sin^4 30^\circ] - [\tan^2 60^\circ + \cot^2 45^\circ] + 3\sec^2 30^\circ = \frac{1}{4} .$$

 [Watch Video Solution](#)

42. Show that  $:- 2[\cos^2 45^\circ + \tan^2 60^\circ] - 6[\sin^2 45^\circ - \tan^2 30^\circ] = 6$  .

 [Watch Video Solution](#)

43. Find the value  $\theta$  in the following :-  $2 \sin 2\theta = \sqrt{3}$ .

 [Watch Video Solution](#)

44. Find the value  $\theta$  in the following :-  $2 \cos 3\theta = 1$ .

 [Watch Video Solution](#)

45. Find the value  $\theta$  in the following :-  $\sqrt{3} \tan 2\theta - 3 = 0$ .

 [Watch Video Solution](#)

46. Find the value  $\theta$  in the following :-  $\tan 3\theta = \sin 45^\circ \cos 45^\circ + \sin 30^\circ$

 [Watch Video Solution](#)

47. Find the value  $\theta$  in the following :-

$$\cos \theta = \cos 60^\circ \cos 30^\circ + \sin 60^\circ \sin 30^\circ .$$

 [Watch Video Solution](#)

48. Find the value  $\theta$  in the following :-

$$\sin 2\theta = \sin 60^\circ \cos 30^\circ - \cos 60^\circ \sin 30^\circ .$$

 [Watch Video Solution](#)

49. If  $\sin(A-B) = \sin A \cos B - \cos A \sin B$  and  $\cos(A-B) = \cos A \cos B + \sin A \sin B$ .

Find the values of  $\sin 15^\circ$  and  $\cos 15^\circ$  .

 [Watch Video Solution](#)

50. Express  $\cot 85^\circ + \cos 75^\circ$  in terms of trigonometric ratios of angles between  $0^\circ$  and  $45^\circ$  .

[Watch Video Solution](#)

51. Without using Trigonometric tables, evaluate:-

$$2 \frac{\sin 43^\circ}{\cos 47^\circ} - \frac{\cot 30^\circ}{\tan 60^\circ} - \sqrt{2} \sin 45^\circ .$$

[Watch Video Solution](#)

52. Without using Trigonometric tables, evaluate:-  $\frac{\cos^2 20^\circ + \cos^2 70^\circ}{\sin^2 59^\circ + \sin^2 31^\circ} .$

[Watch Video Solution](#)

53. Without using Trigonometric tables, evaluate:-

$$2 \frac{\cos 67^\circ}{\sin 23^\circ} - \frac{\tan 40^\circ}{\cot 50^\circ} - \sin 90^\circ .$$

[Watch Video Solution](#)

54. Evaluate :  $\frac{\sin 70^\circ}{\cos 20^\circ} + \frac{\cos ec 36^\circ}{\sec 54^\circ} - \frac{2 \cos 43^\circ \cos ec 47^\circ}{\tan 10^\circ \tan 40^\circ \tan 50^\circ \tan 80^\circ} .$



 [Watch Video Solution](#)

55.

Evaluate

$$\frac{\tan 20^\circ}{\cot 70^\circ} + \frac{\cot 50^\circ}{\tan 40^\circ} + \frac{\sin^2 20^\circ + \sin^2 70^\circ}{\sin \theta \cos(90 - \theta) + \cos \theta \sin(90 - \theta)} .$$

 [Watch Video Solution](#)

56. Without using Trigonometric Tables evaluate the following :-

$$\sin \theta \cos \theta - \frac{\sin \theta \cos(90^\circ - \theta) \cos \theta}{\sec(90^\circ - \theta)} - \frac{\cos \theta \sin(90^\circ - \theta) \sin \theta}{\operatorname{cosec}(90^\circ - \theta)} .$$

 [Watch Video Solution](#)

57. Evaluate :  $\tan 15^\circ \tan 25^\circ \tan 60^\circ \tan 65^\circ \tan 75^\circ$  .

 [Watch Video Solution](#)

58. Evaluate :  $\frac{\tan 65^\circ}{\cot 25^\circ}$  .

 [Watch Video Solution](#)

59. If  $\sin 3A = \cos (A - 26^\circ)$  where  $3A$  is an acute angle, find the value of  $A$ .

 [Watch Video Solution](#)

60. Evaluate :  $\frac{\cos 80^\circ}{\sin 10^\circ} + \cos 59^\circ \operatorname{cosec} 31^\circ$  .

 [Watch Video Solution](#)

61. Without using Trigonometric Tables evaluate the following :-

$\sec 70^\circ \sin 20^\circ - \cos 20^\circ \operatorname{cosec} 70^\circ$  .

 [Watch Video Solution](#)

62. Without using Trigonometric Tables evaluate the following :-

$\frac{2\cos 38^\circ}{\sin 52^\circ} + \frac{4\tan 40^\circ}{\cot 50^\circ} + \frac{12\sec 66^\circ}{\operatorname{cosec} 24^\circ}$

 [Watch Video Solution](#)

63. Without using Trigonometric Tables evaluate the following :-

$$\frac{\cos ec^2 67^\circ - \tan^2 23^\circ}{\sin^2 17^\circ + \sin^2 73^\circ} + \frac{\sin 59^\circ}{\cos 31^\circ} .$$

 [Watch Video Solution](#)

64. Without using Trigonometric Tables evaluate the following :-

$$\frac{\cos 35^\circ}{\sin 55^\circ} + \frac{\sin 11^\circ}{\cos 79^\circ} - \cos 28^\circ \cos ec 62^\circ .$$

 [Watch Video Solution](#)

65. Without using Trigonometric Tables evaluate the following :-

$$\frac{\cos 58^\circ}{\sin 32^\circ} + \frac{\sin 22^\circ}{\cos 68^\circ} - \frac{\cos 38^\circ \cos ec 52^\circ}{\tan 18^\circ \tan 35^\circ \tan 60^\circ \tan 72^\circ \tan 55^\circ} .$$

 [Watch Video Solution](#)



66. Without using Trigonometric Tables evaluate the following :-

$$\left(\frac{\tan 20^\circ}{\operatorname{cosec} 70^\circ}\right)^2 + \left(\frac{\cot 20^\circ}{\sec 70^\circ}\right) + 2\tan 15^\circ \tan 37^\circ \tan 53^\circ \tan 60^\circ \tan 75^\circ$$



Watch Video Solution

67. Without using Trigonometric Tables evaluate the following :-

$$3\left(\frac{\sin 36^\circ}{\cos 54^\circ}\right)^2 - 2\left(\frac{\tan 18^\circ}{\cot 72^\circ}\right)^3 + 2\tan 13^\circ \tan 21^\circ \tan 69^\circ \tan 77^\circ .$$



Watch Video Solution

68. Without using Trigonometric Tables evaluate the following :-

$$\frac{\tan 48^\circ}{2\cot 42^\circ} + \frac{3 \operatorname{cosec} 31^\circ}{\sec 59^\circ} - \frac{\cos 69^\circ}{2\sin 21^\circ} + 2\tan 23^\circ \tan 37^\circ \tan 67^\circ \tan 53^\circ$$



Watch Video Solution

69. Without using Trigonometric Tables evaluate the following :-

$$\sin \theta \cos \theta - \frac{\sin \theta \cos(90^\circ - \theta) \cos \theta}{\sec(90^\circ - \theta)} - \frac{\cos \theta \sin(90^\circ - \theta) \sin \theta}{\operatorname{cosec}(90^\circ - \theta)} .$$

 [Watch Video Solution](#)

70. Without using Trigonometric Tables evaluate the following :-

$$\frac{2\cos 67^\circ}{\sin 23^\circ} - \frac{\tan 40^\circ}{\cot 50^\circ} - \cos 0^\circ + \tan 15^\circ \tan 25^\circ \tan 60^\circ \tan 65^\circ \tan 75^\circ$$

 [Watch Video Solution](#)

71. Without using Trigonometric Tables evaluate the following :-

$$\frac{2\cos 65^\circ}{\sin 25^\circ} - \frac{\tan 20^\circ}{\cot 70^\circ} - \sin 90^\circ + \tan 5^\circ \tan 35^\circ \tan 60^\circ \tan 55^\circ \tan 85^\circ$$

 [Watch Video Solution](#)

72. Without using Trigonometric Tables evaluate the following :-

$$2 \left[ \frac{\cos^2 20^\circ + \cos^2 70^\circ}{\sin^2 25^\circ + \sin^2 65^\circ} \right] - \tan 45^\circ + \tan 13^\circ \tan 23^\circ \tan 30^\circ \tan 67^\circ \tan 77^\circ$$

 [Watch Video Solution](#)

73. Without using Trigonometric Tables evaluate the following :-

$$(\sec 50^\circ \sin 40^\circ + \cos 40^\circ \operatorname{cosec} 50^\circ)$$

 [Watch Video Solution](#)

74. Without using Trigonometric Tables evaluate the following :-

$$\frac{\frac{1}{2}\sec^2 60^\circ - \frac{1}{2}\tan^2 60^\circ}{4[\cos^2 29^\circ + \cos^2 61^\circ]}$$

 [Watch Video Solution](#)

75. Without using Trigonometric Tables evaluate the following :-

$$\frac{2\sin 68^\circ}{\cos 22^\circ} - \frac{2\cot 15^\circ}{5\tan 75^\circ} - \frac{3\tan 45^\circ \tan 20^\circ \tan 40^\circ \tan 70^\circ \tan 50^\circ}{5}$$



Watch Video Solution

76. Evaluate :  $\frac{\sin 70^\circ}{\cos 20^\circ} + \frac{\operatorname{cosec} 36^\circ}{\sec 54^\circ} - \frac{2\cos 43^\circ \operatorname{cosec} 47^\circ}{\tan 10^\circ \tan 40^\circ \tan 50^\circ \tan 80^\circ}$  .



Watch Video Solution

77. Without using Trigonometric Tables evaluate the following :-

$$\frac{\sin^2 35^\circ + \sin^2 55^\circ}{\tan 10^\circ \tan 20^\circ \tan 30^\circ \tan 70^\circ \tan 80^\circ}$$



Watch Video Solution

78. Without using Trigonometric Tables evaluate the following :-

$$\frac{\sin^2 35^\circ + \sin^2 55^\circ}{\tan 10^\circ \tan 20^\circ \tan 30^\circ \tan 70^\circ \tan 80^\circ}$$



Watch Video Solution

79. Without using Trigonometric Tables evaluate the following :-

$$\frac{\sec^2 54^\circ - \cot^2 36^\circ}{\operatorname{cosec}^2 57^\circ - \tan^2 33^\circ} + 2 \sin^2 38^\circ \sec^2 52^\circ - \sin^2 45^\circ .$$

 [Watch Video Solution](#)

80. Without using Trigonometric Tables evaluate the following :-

$$\sec^2 10^\circ - \cot^2 80^\circ + \frac{\sin 15^\circ \cos 75^\circ + \cos 15^\circ \sin 75^\circ}{\cos \theta \sin(90^\circ - \theta) + \sin \theta \cos(90^\circ - \theta)} .$$

 [Watch Video Solution](#)

81. Without using Trigonometric Tables evaluate the following :-

$$\frac{\sec^2(90^\circ - \theta) - \cot^2 \theta}{2[\sin^2 25^\circ + \sin^2 65^\circ]} + \frac{2 \cos^2 60^\circ \tan^2 28^\circ \tan^2 62^\circ}{3[\sec^2 43^\circ - \cot^2 47^\circ]} .$$

 [Watch Video Solution](#)

82. If  $\sin 3\theta = \cos(\theta - 6^\circ)$  where  $3\theta$  and  $\theta - 6^\circ$  are acute angles, find the value of  $\theta$  .



Watch Video Solution

83. If  $\sin A = \cos B$ , both  $A$  and  $B$  are acute angles, find  $A + B$ .



Watch Video Solution

84. If  $\operatorname{cosec} 2A = \sec (A + 6^\circ)$  where  $2A$  and  $A + 6^\circ$  are acute angles find the value of  $A$ .



Watch Video Solution

85. If  $\sin 5\theta = \cos 4\theta$  where  $5\theta$  and  $4\theta$  are acute angles, find the value of  $\theta$ .



Watch Video Solution

86. If  $\tan 2\theta = \cot 4\theta$  where  $2\theta$  and  $4\theta$  are acute angles. Find  $\theta$



Watch Video Solution

87. If  $\cos 3\theta = \sin (\theta - 6^\circ)$  where  $3\theta$  and  $\theta - 6^\circ$  are acute angles, find the value of  $\theta$ .

 [Watch Video Solution](#)

88. If  $A, B, C$  are interior angles of  $\triangle ABC$ , prove that :-  
$$\sin\left(\frac{A + C}{2}\right) = \cos\left(\frac{B}{2}\right).$$

 [Watch Video Solution](#)

89. If  $A, B, C$  are interior angles of  $\triangle ABC$ , prove that :-  
$$\cos\left(\frac{B + C}{2}\right) = \sin\left(\frac{A}{2}\right).$$

 [Watch Video Solution](#)

90. If A, B, C are interior angles of  $\triangle ABC$ , prove that :-

$$\cos^2\left(\frac{A}{2}\right) + \cos^2\left(\frac{B+C}{2}\right) = 1.$$

 [Watch Video Solution](#)

91. If A, B, C are interior angles of  $\triangle ABC$ , prove that :-

$$1 + \tan^2\left(\frac{B+C}{2}\right) = \operatorname{cosec}^2 \frac{A}{2}.$$

 [Watch Video Solution](#)

92. If A, B, C are interior angles of  $\triangle ABC$ , prove that :-

$$1 + \cot^2\left(\frac{B+C}{2}\right) = \sec^2 \frac{A}{2}.$$

 [Watch Video Solution](#)

93. If A, B, C are interior angles of  $\triangle ABC$ , prove that :-

$$\tan\left(\frac{A+B}{2}\right) = \cot \frac{C}{2}.$$



 [Watch Video Solution](#)

94. Match the following :

- |                            |              |
|----------------------------|--------------|
| (i) $\sin (90^\circ - A)$  | (a) $\sin A$ |
| (ii) $\cos 0^\circ$        | (b) 0        |
| (iii) $\sin 0^\circ$       | (c) 1        |
| (iv) $\cos (90^\circ - A)$ | (d) $\cos A$ |

 [Watch Video Solution](#)

95. Prove that  $\sec A (1 - \sin A) (\sec A + \tan A) = 1$ .

 [Watch Video Solution](#)

96. Prove the following :  $\frac{\cot A - \cos A}{\cot A + \cos A} = \frac{\cos cA - 1}{\cos cA + 1}$ .

 [Watch Video Solution](#)

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

 [Watch Video Solution](#)

98. Prove the following :  $\tan^2 A - \tan^2 B = \frac{\sin^2 A - \sin^2 B}{\cos^2 A \cos^2 B}$  .

 [Watch Video Solution](#)

99.  $(\sec A - \cos A) (\cot A + \tan A) = \tan A \sec A$ .

 [Watch Video Solution](#)

100.  $\sin A (1 + \tan A) + \cos A (1 + \cot A) = \sec A + \operatorname{cosec} A$  .

 [Watch Video Solution](#)

101.  $(\operatorname{cosec} \theta - \sin \theta) (\sec \theta - \cos \theta) (\tan \theta + \cot \theta) = 1$ .



Watch Video Solution

102.  $(1 + \cot A - \operatorname{cosec} A)(1 + \tan A + \sec A) = 2$ .



Watch Video Solution

103.  $(\sin \theta + \operatorname{cosec} \theta)^2 + (\cos \theta + \sec \theta)^2 = \tan^2 \theta + \cot^2 \theta + 7$ .



Watch Video Solution

104.  $\tan^2 \theta + \cot^2 \theta + 2 = \sec^2 \theta \operatorname{cosec}^2 \theta$ .



Watch Video Solution

105. Prove that  $\frac{\cos A}{1 - \tan A} - \frac{\sin^2 A}{\cos A - \sin A} = \sin A + \cos A$ .



Watch Video Solution

$$106. \frac{1 + \sin \theta}{1 - \sin \theta} = 1 + \frac{2 \tan \theta}{\cos \theta} + 2 \tan^2 \theta.$$



Watch Video Solution

$$107. \text{ Prove } \frac{\tan \theta}{\sec \theta - 1} + \frac{\tan \theta}{\sec \theta + 1} = 2 \operatorname{cosec} \theta.$$



Watch Video Solution

$$108. \frac{1 + \cos \theta + \sin \theta}{1 + \cos \theta - \sin \theta} = \frac{1 + \sin \theta}{\cos \theta}.$$



Watch Video Solution

109. Prove the following identities, where the angles involved are acute angles for which the expressions are defined. :

$$(\operatorname{cosec} \theta - \cot \theta)^2 = \frac{1 - \cos \theta}{1 + \cos \theta}.$$



Watch Video Solution

$$110. \frac{\tan \theta}{1 - \cot \theta} + \frac{\cot \theta}{1 - \tan \theta} = 1 + \tan \theta + \cot \theta.$$

 [Watch Video Solution](#)

111.

$$\frac{\sin A + \cos A}{\sin A - \cos A} + \frac{\sin A - \cos A}{\sin A + \cos A} = \frac{2}{\sin^2 A - \cos^2 A} = \frac{2}{1 - 2 \cos^2 A} = \frac{2}{\sin^2 A}$$

 [Watch Video Solution](#)

$$112. \frac{\tan^3 \theta}{1 + \tan^2 \theta} + \frac{\cot^3 \theta}{1 + \cot^2 \theta} = \sec \theta \cos \theta - 2 \sin \theta \cos \theta.$$

 [Watch Video Solution](#)

$$113. 2 \sec^2 \theta - \sec^4 \theta - 2 \cos^2 \theta + \cos^4 \theta = \cot^4 \theta - \tan^4 \theta.$$

 [Watch Video Solution](#)

114. Prove that  $\frac{\sin \theta}{1 + \cos \theta} + \frac{1 + \cos \theta}{\sin \theta} = 2 \operatorname{cosec} \theta$ .

 [Watch Video Solution](#)

115.  $\frac{\tan A + \sec A - 1}{\tan A - \sec A + 1} = \frac{1 + \sin A}{\cos A}$ .

 [Watch Video Solution](#)

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

 [Watch Video Solution](#)

117.  $\frac{\tan \theta}{1 - \cot \theta} + \frac{\cot \theta}{1 - \tan \theta} = 1 + \tan \theta + \cot \theta$ .

 [Watch Video Solution](#)

118.  $\frac{\cos eA}{\cos eA - 1} + \frac{\cos eA}{\cos eA + 1} = 2 + 2 \tan^2 A$ .



Watch Video Solution

$$119. (\tan A - \tan B)^2 + (1 + \tan A \tan B)^2 = \sec^2 A \sec^2 B.$$



Watch Video Solution

120. If  $\frac{\cos \alpha}{\cos \beta} = m$  and  $\frac{\cos \alpha}{\sin \beta} = n$  then Show that  $(m^2 + n^2) \cos^2 \beta = n^2$ .



Watch Video Solution

121. If  $\cos \theta + \sin \theta = \sqrt{2} \cos \theta$ , then show that  $\cos \theta - \sin \theta = \sqrt{2} \sin \theta$ .



Watch Video Solution

122. If  $\tan \theta + \sin \theta = m$ ,  $\tan \theta - \sin \theta = n$ , then show that  $m^2 - n^2 = 4\sqrt{mn}$ .

 [Watch Video Solution](#)

123. If  $\sec \theta = x + \frac{1}{4x}$ , then prove that  $\sec \theta + \tan \theta = 2x$  or  $\frac{1}{2x}$ .

 [Watch Video Solution](#)

124. IF  $\sin \theta + \sin^2 \theta = 1$  prove that  $\cos^2 \theta + \cos^4 \theta = 1$ .

 [Watch Video Solution](#)

125. Evaluate without using trigonometric tables :  
 $\cot \theta \tan(90^\circ - \theta) - \sec(90^\circ - \theta) \operatorname{cosec} \theta + \sin^2 65^\circ + \sin^2 25^\circ + \sqrt{3} \tan 5^\circ$

 [Watch Video Solution](#)

126. Prove that :  $\frac{1 + \cos \theta - \sin^2 \theta}{\sin \theta(1 + \cos \theta)} = \cot \theta$ .



 [Watch Video Solution](#)

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

 [Watch Video Solution](#)

128. If  $\operatorname{cosec} \theta - \sin \theta = l$ , and  $\sec \theta - \cos \theta = m$ , show that  $l^2 m^2 (l^2 + m^2 + 3) = 1$ .

 [Watch Video Solution](#)

129. Prove that  $\frac{\operatorname{cosec} \theta + \cot \theta}{\operatorname{cosec} \theta - \cot \theta} = \left( \frac{1 + \cos \theta}{\sin \theta} \right)^2$ .

 [Watch Video Solution](#)

130. Prove that  $\frac{1 + \tan^2 \theta}{1 + \cot^2 \theta} = \left( \frac{1 - \tan \theta}{1 - \cot \theta} \right)^2$ .

 [Watch Video Solution](#)

131. Prove that  $\frac{\cos A}{1 - \tan A} - \frac{\sin^2 A}{\cos A - \sin A} = \sin A + \cos A$  .

 [Watch Video Solution](#)

132. Prove that  $\sec A (1 - \sin A) (\sec A + \tan A) = 1$ .

 [Watch Video Solution](#)

133. Prove that  $(\sec A + \cos A) (\sec A - \cos A) = \tan^2 A + \sin^2 A$  .

 [Watch Video Solution](#)

134. Prove that  $\frac{1 - \tan^2 \theta}{\cot^2 \theta - 1} = \tan^2 \theta, \theta \neq 45^\circ$  .

 [Watch Video Solution](#)

135. Prove that  $\frac{\sin^2 A}{\cos^2 A} + \frac{\cos^2 A}{\sin^2 A} = \frac{1}{\sin^2 A \cos^2 A} - 2$ .



Watch Video Solution

136. Prove that  $\frac{\tan \theta + \sin \theta}{\tan \theta - \sin \theta} = \frac{\sec \theta + 1}{\sec \theta - 1}$ .



Watch Video Solution

137. Prove that  $\frac{(1 + \sin \theta)^2 + (1 - \sin \theta)^2}{2 \cos^2 \theta} = \frac{1 + \sin^2 \theta}{1 - \sin^2 \theta}$ .



Watch Video Solution

138. Prove the following identities, where the angles involved are acute

angles for which the expressions are defined. :

$$\frac{\cos A}{1 + \sin A} + \frac{1 + \sin A}{\cos A} = 2 \sec A.$$



Watch Video Solution

139. Prove that  $\frac{1 - \cos \theta}{1 + \cos \theta} = (\sec \theta - \cot \theta)^2$ .

 [Watch Video Solution](#)

140. Prove that  $\frac{1 + \sin \theta}{\cos \theta} + \frac{\cos \theta}{1 + \sin \theta} = 2 \sec \theta$ .

 [Watch Video Solution](#)

141. Prove that  $\frac{1 - \sin \theta}{1 + \sin \theta} = (\sec \theta - \tan \theta)^2$ .

 [Watch Video Solution](#)

142. Prove that  $\frac{\sin \theta - 2 \sin^3 \theta}{2 \cos^3 \theta - \cos \theta} = \tan \theta$ .

 [Watch Video Solution](#)

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



 [Watch Video Solution](#)

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

 [Watch Video Solution](#)

145. Prove that  $(1 + \tan^2 \theta)(1 - \sin \theta)(1 + \sin \theta) = 1$ .

 [Watch Video Solution](#)

146. Prove that  $(1 + \cot \theta - \operatorname{cosec} \theta)(1 + \tan \theta + \sec \theta) = 2$ .

 [Watch Video Solution](#)

147. Prove that  $\frac{\sin \theta}{\cot \theta + \operatorname{cosec} \theta} = 2 + \frac{\sin \theta}{\cot \theta - \operatorname{cosec} \theta}$ .

 [Watch Video Solution](#)

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



Watch Video Solution

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



Watch Video Solution

150. Prove that  $\sin \theta (\cos e\theta - \sin \theta) = \cos^2 \theta$ .



Watch Video Solution

151. Prove that  $\cot \theta + \tan \theta = \sec \theta \cos e\theta$ .



Watch Video Solution

152. Prove that  $(\cos A + \sin A)^2 + (\cos A - \sin A)^2 = 2$ .





[Watch Video Solution](#)

153. Prove that  $\tan^2 \theta - \sin^2 \theta = \tan^2 \theta \sin^2 \theta$ .



[Watch Video Solution](#)

154. Prove that  $\sec^4 \theta - \sec^2 \theta = \tan^4 \theta + \tan^2 \theta$ .



[Watch Video Solution](#)

155. Prove that  $(1 + \tan^2 \theta) \sin \theta \cos \theta = \tan \theta$ .



[Watch Video Solution](#)

156. Prove that  $(\sec \theta + \tan \theta)(1 - \sin \theta) = \cos \theta$ .



[Watch Video Solution](#)

157. Prove that  $(\csc \theta + \cot \theta)(1 - \cos \theta) = \sin \theta$ .



Watch Video Solution

158. Prove that  $\sin^3 \theta + \cos^3 \theta = (\sin \theta + \cos \theta)(1 - \sin \theta \cos \theta)$ .



Watch Video Solution

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



Watch Video Solution

160. Prove that  $\frac{1}{\csc A + \cot A} = (\csc A - \cot A)$ .



Watch Video Solution

161. Prove that  $\frac{\csc A + \cot A}{\csc A - \cot A} = (\csc A + \cot A)^2$ .



 [Watch Video Solution](#)

162. Prove that  $\frac{\cos ecA}{\cos ecA - 1} + \frac{\cos ecA}{\cos ecA + 1} = 2 \sec^2 A .$

 [Watch Video Solution](#)

163. Prove that  $\frac{\sec^2 \theta - \sin^2 \theta}{\tan^2 \theta} = \cos ec^2 \theta - \cos^2 \theta .$

 [Watch Video Solution](#)

164. Prove that:  $(1 + \cos^2 2A) / (\sin^2 2A) = 2 \operatorname{cosec}^2 2A - 1$

 [Watch Video Solution](#)

165. Prove that  $\left( \frac{1}{\cos \theta} - \cos \theta \right) \left( \frac{1}{\sin \theta} - \sin \theta \right) = \frac{1}{\tan \theta + \cot \theta} .$

 [Watch Video Solution](#)

166. Prove that  $\frac{1 - \cos \theta}{1 + \cos \theta} = (\operatorname{cosec} \theta - \cot \theta)^2$ .

 [Watch Video Solution](#)

167.  $\sqrt{\sec^2 \theta + \operatorname{cosec}^2 \theta} = \tan \theta + \cot \theta = \sec \theta \cdot \operatorname{cosec} \theta$ .

 [Watch Video Solution](#)

168. Prove that  $\sqrt{\frac{1 + \sin A}{1 - \sin A}} = \frac{1 + \sin A}{\cos A}$ .

 [Watch Video Solution](#)

169. Prove that  $\sqrt{\frac{1 + \cos \theta}{1 - \cos \theta}} = \operatorname{cosec} \theta + \cot \theta$ .

 [Watch Video Solution](#)

170. Prove that  $\sqrt{\frac{\sec \theta - \tan \theta}{\sec \theta + \tan \theta}} = \sec \theta - \tan \theta$ .

 [Watch Video Solution](#)

171.  $\sqrt{\frac{\cos \theta + 1}{\cos \theta - 1}} = \frac{\cos \theta}{1 - \sin \theta} = \frac{\cot \theta}{\cos \theta - 1}$ .

 [Watch Video Solution](#)

172. Prove that  $\frac{\tan^3 \theta - 1}{\tan \theta - 1} = \sec^2 \theta + \tan \theta$ .

 [Watch Video Solution](#)

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

 [Watch Video Solution](#)

174. Prove that  $\frac{\sin \theta}{1 + \cos \theta} + \frac{\sin \theta}{1 - \cos \theta} = \frac{2}{\sin \theta}$ .

 [Watch Video Solution](#)

175.  $\frac{\sin A - \sin B}{\cos A + \cos B} + \frac{\cos A - \cos B}{\sin A + \sin B} = 0$ .

 [Watch Video Solution](#)

176. If  $x \cos \theta - y \sin \theta = a$  and  $x \sin \theta + y \cos \theta = b$ , then prove that  $x^2 + y^2 = a^2 + b^2$ .

 [Watch Video Solution](#)