MATHS

NCERT - NCERT Maths(Tamil)

TRIGONOMETRY

Example

1. If tan A $= \frac{3}{4}$, then find the other trigonometric ratio of angle A.

Watch Video Solution

2. If $\angle A$ and $\angle P$ are acute angles such that $\sin A = \sin P$ then prove that $\angle A = \angle P$

Watch Video Solution

3. Consider a triangle PQR ,right at R ,in which PQ = 29 units ,QR =21 units and $\angle PQR = \theta$, then find the values of

(i) $\cos^2\theta + \sin^2\theta$ and $(ii)\cos^2\theta - \sin^2\theta$

Watch Video Solution

4. In ΔABC , right angle is at B,AB = 5cm and $\angle ACB = 30^\circ$ Determine the lengths of the sides BC and AC.

Watch Video Solution

5. A chord of a circle of radius 6cm is making an angle 60° at the centre.Find the length of the chord.

Watch Video Solution

6. In ΔPQR ,right angle is at Q,PQ =3cm and PR =6cm Determine $\angle QPR$ and $\angle PRQ$

Watch Video Solution

7. If $\sin(A-B)=\frac{1}{2}, \cos(A+B)=\frac{1}{2}$, where $0^\circ \angle A+B \leq 90^\circ$ and $A>B$ find A and B

Watch Video Solution

8. Evaluate $\frac{\sec 35^\circ}{\cos ec55^\circ}$

Watch Video Solution

9. If $\cos 7A=\sin(A-6^\circ)$, where 7A is an acute angle ,find the value of A .

Watch Video Solution

Watch Video Solution

10. If $\sin A = \cos B,$ then prove that A+B $= 90^\circ$

Watch Video Solution

11. Express $\sin 81^\circ + \tan 81^\circ$ in terms of trigonometric ratio of angles between 0° and 45°

Watch Video Solution

12. If A , B and C are interior angles of triangle ABC ,then show that sin $\left(\frac{B+C}{2}\right) = \frac{\cos(A)}{2}$

Watch Video Solution

13. Prove the below identities

$$\cot\theta + \tan\theta = \sec\theta \cos ec\theta$$

Watch Video Solution

14. Prove that following identities

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

Watch Video Solution

15. Prove that : $\sqrt{\dfrac{1+\cos\theta}{1-\cos\theta}} = \cos ec\theta + \cot\theta.$

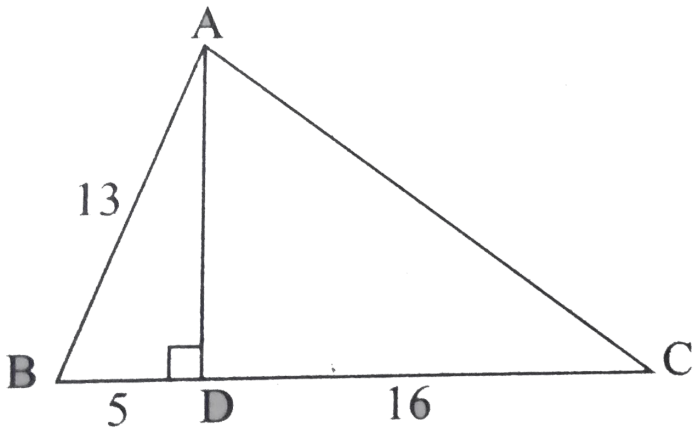
Watch Video Solution

Do This

1. From the given figure, find the values of

(i) sin B (ii) sec B (iii) cot B (iv) cos C

(v) tan C (vi) cosec C



Watch Video Solution

2. In $\Delta XYZ, \angle Y$ is right angle , $XZ = 17m$ and $YZ = 15m$ then find

$(i) \sin X$

$(ii) \cos Z$

$(iii) \tan X$

Watch Video Solution

3. In a triangle PQR with right angle at Q , the value of $\angle Pisx, PQ = 7cm$ and $QR24cm$, then find sin x and cos x

Watch Video Solution

4. Find the values of cosec60°, $\sec 60^\circ$ and $\cot 60^\circ$

Watch Video Solution

5. If $\sin\theta = \frac{15}{17}$, then $\cos\theta = ?$

Watch Video Solution

6. If $\tan x = \frac{5}{12}$, then find sec x.

Watch Video Solution

7. If $\cos ec\theta = \frac{25}{7}$, then find $\cot\theta$

Watch Video Solution

Try This

1. In a right angle triangle ABC, right angle is at C, BC+CA = 23 cm and BC-CA = 7cm ,then find sin A tan B

Watch Video Solution

2. Express sec A and cos A in terms of sides of right angle triangle

Watch Video Solution

3. Find the values of $\sin 30^\circ$, $\cos 30^\circ$, $\tan 30^\circ$, $\cos ec 30^\circ$, $\sec 30^\circ$ and $\cot 30^\circ$ by using the ratio concepts .

Watch Video Solution

4. Find the values for $\tan 90^\circ$, $\cos ec 90^\circ$, $\sec 90^\circ$ and $\cot 90^\circ$

Watch Video Solution

5. Evaluate the following and justify your answer.

(i) $\dfrac{\sin^2 15^\circ + \sin^2 75^\circ}{\cos^2 36^\circ + \cos^2 54^\circ}$

Watch Video Solution

6. Evaluate the following and justify your answer.

$\sin 5^\circ \cos 85^\circ + \cos 5^\circ \sin 85^\circ$

Watch Video Solution

7. Evaluate the following and justify your answer.

$\sec 16^\circ \cos ec74^\circ - \cot 74^\circ \tan 16^\circ$

Watch Video Solution

Think And Discuss

1. Discuss among your friends

Does $\sin x = \frac{4}{3}$ exists for some value of angle?

Watch Video Solution

2. Discuss among your friends

The value of sin A and cos A is always less than 1, Why?

Watch Video Solution

Watch Video Solution

3. Discuss among your friends

tan A is product of tan and A

Watch Video Solution

4. Is $\frac{\sin A}{\cos A}$ equal to tan A ?

Watch Video Solution

5. IS $\frac{\cos A}{\sin A}$ equal to cot A ?

Watch Video Solution

6. Discuss with your friends about the following conditions:

What can you say about $\cos ec0^{\circ} = \frac{1}{\sin 0^{\circ}}$? Is the defined ? Why ?

Watch Video Solution

7. Discuss with your friends about the following conditions:

What can you say about $\cot 0^\circ = \frac{1}{\tan 0^\circ}$ Is it defined ? Why ?

Watch Video Solution

8. Discuss with your friends about the following conditions:

$\sec 0^\circ = 1$Why?

Watch Video Solution

9. Ovserve the above table

What can you say about the values of sin A and cos A ,as the value of angle A increases from $0^\circ \text{to} 90^\circ$?

If $A \geq B$ then $\sin \geq \sin B$, Is the true?

If $A \geq B,$ then $\cos A \geq \cos B$, Is it true ? Discuss.

Watch Video Solution

10. If one of the sides and any other part (either an acute angle or any side) of a right angle triangle is known, the remaining sides and angles of the triangle can be determined. Do you agree? Explain with an example.

Watch Video Solution

11. For which value of an acute angle θ, $(i)\frac{\cos\theta}{1-\sin\theta}+\frac{\cos\theta}{1+\sin\theta}=4$ is true ?

For which value of $0^\circ \leq \theta \leq 90^\circ$, above equation is not defined?

Watch Video Solution

12. Find the blanks:

Linear Polynomial	Zero of the polynomial
$x + a$	$-a$
$x - a$	----------
$ax + b$	----------
$ax - b$	$\frac{b}{a}$

Watch Video Solution

13. Are these identities true only for $0^\circ \leq A \leq 90^\circ$? If not ,for which other values of A they are true ?

sec^(2) A-tan ^(2) A =1

Watch Video Solution

Exercise 11 1

1. In right angle triangle ABC, 8cm ,15 cm and 17 cm are the length of AB,BC and CA respectively , Then find $\sin A, \cos A$ and $\tan A$.

Watch Video Solution

2. The sides of a right angle triangle PQR are PQ = 7cm , PR =25 cm and $\angle Q = 90^\circ$ respectively , Then find tan P -tan R

Watch Video Solution

3. In a right angle triangle ABC with right angle at B , in which a= 24 units , b = 25 units and $\angle BAC = \theta,$ then find sin A tan A $(A < 90^\circ)$

Watch Video Solution

4. If $\cos A = \frac{12}{13}$, then find $\sin A$ and $\tan A(A < 90^\circ)$

Watch Video Solution

5. If 3 tan A =4 ,then find sin A and cos A

Watch Video Solution

6. In ΔABC and ΔXYZ, if $\angle A$ and $\angle X$ are acute angles such that $\cos A = \cos X$ then show that $\angle A = \angle X$

Watch Video Solution

7. Given $\cot\theta = \frac{7}{8}$, then evaluate (i) $\frac{(1+\sin\theta)(1-\sin\theta)}{(1+\cos\theta)(1-\cos\theta)}$ $(ii)\frac{(1+\sin\theta)}{\cos\theta}$

Watch Video Solution

8. In a right angle triangle ABC, right angle is at B ,If tan $A = \sqrt{3}$, then find the value of

(i)

$\sin A \cos C + \cos A \sin C$ $(ii) \cos A \cos C - \sin A \sin C$

Watch Video Solution

Exercise 11 2

1. Evaluate the following

$\sin 45^\circ + \cos 45^\circ$

Watch Video Solution

2. Evaluate the following

$$\frac{\cos 45^\circ}{\sec 30^\circ + \cos ec60^\circ}$$

Watch Video Solution

3. Evaluate the following

$$\frac{\sin 30^\circ + \tan 45^\circ - \cos ec60^\circ}{\cot 45^\circ + \cos 60^\circ - \sec 30^\circ}$$

Watch Video Solution

4. Evaluate the following

$$2\tan^2 45^\circ + \cos^2 30^\circ - \sin^2 60^\circ$$

Watch Video Solution

5. Evaluate the following

$$\frac{\sec^2 60^\circ - \tan^2 60^\circ}{\sin^2 30^\circ + \cos^2 30^\circ}$$

Watch Video Solution

6. $\frac{2\tan 30^\circ}{1 + \tan^2 45^\circ} =$

A. $\sin 60^\circ$

B. $\cos 60^\circ$

C. $\tan 30^\circ$

D. $\sin 30^\circ$

Answer: c

Watch Video Solution

7. The value of $\frac{1-\tan^2 45^\circ}{1+\tan^2 45^\circ}$ is

A. $\tan 90^\circ$

B. 1

C. $\sin 45^\circ$

D. 0

Answer: d

Watch Video Solution

8. The value of $\frac{2\tan 30^\circ}{1-\tan^2 30^\circ}$ is equal to

A. $\cos 60^\circ$

B. $\sin 60^\circ$

C. $\tan 60^\circ$

D. $\sin 30^\circ$

Answer: c

Watch Video Solution

9. Evaluate $\sin 60^\circ \cos 30^\circ - \sin 30^\circ \cos 60^\circ$, What is the value of $\sin(60^\circ - 30^\circ)$ What can you conclude ?

Watch Video Solution

10. Is it right to say that $\cos(60^\circ + 30^\circ) = \cos 60^\circ \cos 30^\circ - \sin 60^\circ \sin 30^\circ$

Watch Video Solution

11. In right angle triangle ΔPQR ,right angle at Q,PQ = 6cm and $\angle RPQ = 60^\circ$ Determine the lengths of QR and PR.

Watch Video Solution

12. In ΔXYZ, right angle is at Y,YZ =x, and XZ =2x Then determine $\angle YXZ$ and $\angle YZX$.

Watch Video Solution

13. Is it right to say that $\sin(A + B) = \sin A + \sin B$? Justify your answer.

Watch Video Solution

Exercise 11 3

1. Evaluate

$$\frac{\tan 36^\circ}{\cot 54^\circ}$$

Watch Video Solution

2. Evaluate

$$\cos 12^\circ - \sin 78^\circ$$

Watch Video Solution

3. Evaluate

$$\cos ec31^\circ - \sec 59^\circ$$

Watch Video Solution

Watch Video Solution

4. Evaluate

$\sin 15^\circ \sec 75^\circ$

Watch Video Solution

5. Evaluate

$\tan 26^\circ \tan 64^\circ$

Watch Video Solution

6. Show that

$\tan 48^\circ \tan 16^\circ 42^\circ \tan 74^\circ = 1$

Watch Video Solution

7. Show that

$\cos 36^\circ \cos 54^\circ - \sin 36^\circ \sin 54^\circ = 0$

Watch Video Solution

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

Watch Video Solution

9. If tan A $= \cot B$ where A and B are acute angles prove that $A + B = 90^\circ$

Watch Video Solution

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

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

Watch Video Solution

11. Expression $75^\circ + \cos 65^\circ$ in terms of trigonometric ratios of angles between 0° and 45°

Watch Video Solution

Exercise 11 4

1. Evaluate the following

$$(1+\tan\theta+\sec\theta)(1+\cos\theta-\cos ec\theta)$$

Watch Video Solution

2. Evaluate the following

$$(\sin\theta + \cos\theta)^2 + (\sin\theta - \cos\theta)^2$$

Watch Video Solution

3. Evaluate the following

$$(\sec^2\theta - 1)(\cos ec^2\theta - 1)$$

Watch Video Solution

4. Show that $(\cos ec\theta - \cot\theta)^2 = \dfrac{1 - \cos\theta}{1 + \cos\theta}$

Watch Video Solution

5. Show that $\sqrt{\dfrac{1 + \sin A}{1 - \sin A}} = \sec A + \tan A$

Watch Video Solution

6. Show that $\frac{1-\tan^2 A}{\cot^2 A-1}=\tan^2 A$

Watch Video Solution

7. Show that $\frac{1}{\cos\theta}-\cos\theta=\tan\theta.\sin\theta$

Watch Video Solution

8. Simplify sec A $(1-\sin A)(\sec A+\tan A)$

Watch Video Solution

9. Prove :

$(\sin A+\cos ecA)^2+(\cos A+\sec A)^2=7+\tan^2 A+\cot^2 A.$

Watch Video Solution

10. Simplify $(1-\cos\theta)(1+\cos\theta)\left(1+\cot^2\theta\right)$.

Watch Video Solution

11. If $\sec\theta+\tan\theta=p,$ then what is the value of $\sec\theta-\tan\theta$?

Watch Video Solution

12. If $\cos ec\theta+\cot\theta=k,$ then prove that $\cos\theta=\dfrac{k^2-1}{k^2+1}$

Watch Video Solution

Optional Exercise

1. Prove that $\dfrac{\cot\theta-\cos\theta}{\cot\theta+\cos\theta}=\dfrac{\cos ec\theta-1}{\cos ec\theta+1}$

Watch Video Solution

2. Prove that $\frac{\sin\theta - \cos\theta + 1}{\sin\theta + \cos\theta - 1} = \frac{1}{\sec\theta - \tan\theta}$ [use the identity $\sec^2\theta = 1 + \tan^2\theta$]

Watch Video Solution

3. Prove that $(\cos ecA - \sin A)(\sec A - \cos A) = \frac{1}{\tan A + \cot A}$

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

6. Prove that $\frac{(\sec A - 1)}{(\sec A + 1)} = \left(\frac{1 - \cos A}{(1 + \cos A)}\right.$

Watch Video Solution