

Chapter-Introduction to Trigonometry

Question bank

Q1.

If $\sec \theta = x + \frac{1}{4x}$, $x \neq 0$, find $(\sec \theta + \tan \theta)$.

Q2.

Q. 5. Prove that

$$\frac{\tan^2 A}{\tan^2 A - 1} + \frac{\operatorname{cosec}^2 A}{\sec^2 A - \operatorname{cosec}^2 A} = \frac{1}{1 - 2\cos^2 A}$$

Q3.

Prove that:

$$\frac{\sin \theta}{\cot \theta + \operatorname{cosec} \theta} = 2 + \frac{\sin \theta}{\cot \theta - \operatorname{cosec} \theta}$$

Q4.

In an acute angled triangle ABC if $\sin(A + B - C) = \frac{1}{2}$ and $\cos(B + C - A) = \frac{1}{\sqrt{2}}$ find $\angle A$, $\angle B$ and $\angle C$.

Q5.

If $7 \operatorname{cosec} \phi - 3 \cot \phi = 7$, prove that $7 \cot \phi - 3 \operatorname{cosec} \phi = 3$.

Q6.

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

Q7.

Prove that $\sec^2 \theta + \operatorname{cosec}^2 \theta$ can never be less than 2.

Q8.

..If $(\sec A + \tan A)(\sec B + \tan B)(\sec C + \tan C)$
 $= (\sec A - \tan A)(\sec B - \tan B)(\sec C - \tan C)$

Prove that each of the side is equal to ± 1 .

Q9

2.If $4 \sin \theta = 3$, find the value of x if

$$\sqrt{\frac{\operatorname{cosec}^2 \theta - \cot^2 \theta}{\sec^2 \theta - 1}} + 2 \cot \theta = \frac{\sqrt{7}}{x} + \cos \theta$$

Q10

If $\sin \theta + \sin^2 \theta + \sin^3 \theta = 1$, then find the value of $\cos^6 \theta - 4 \cos^4 \theta + 8 \cos^2 \theta$.