Chapter-Introduction to Trigonometry
Question bank

Q1.

. Prove that:

$$\frac{\tan\theta}{1-\cot\theta}+\frac{\cot\theta}{1-\tan\theta}=1+\sec\theta\,\text{cosec}\,\theta$$

Q2.

.Prove that $b^2x^2-a^2y^2=a^2b^2$, if :

(1) $x=a\sec\theta, y=b\tan\theta$, or

(2) $x=a\,\text{cosec}\,\theta, y=b\cot\theta$

Q3.

.Prove that :

$$\frac{\cot^3\theta\sin^3\theta}{(\cos\theta+\sin\theta)^2}+\frac{\tan^3\theta\cos^3\theta}{(\cos\theta+\sin\theta)^2}=\frac{\sec\theta\,\text{cosec}\,\theta-1}{\text{cosec}\,\theta+\sec\theta}$$

Q4.

.If $\cos\theta+\sin\theta=p$ and $\sec\theta+\text{cosec}\,\theta=q$, prove that $q(p^2-1)=2p$

Q5.

.If $x=r\sin A\cos C$, $y=r\sin A\sin C$ and $z=r\cos A$, then prove that $x^2+y^2+z^2=r^2$

Q6.

If cosθ-sinθ=√2 sinθ,prove that cosθ+sinθ=√2 cosθ

Q7.

If cosec (A-B) = 2, cot (A + B) = —0° < (A + B) <90°, A > B, then find A and B

Q8.

If 3x= cosec θ and 3/x= cot θ, find the value of 3(x²-1/x²)

Q9.

Find the value of cosec 30° geometrically.

Q10.

$$\text{Show that } \tan^4\theta+\tan^2\theta=\sec^4\theta-\sec^2\theta$$