Answer on question 34067 – Math – Trigonometry

sinA/1-COSA+tanA/1+cosA=2secAcosecA+cotA prove that

Proving

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

$$(in\ the\ first\ fraction\ we\ multuply\ the\ denominator\ and\ denominator\ by\ (1+\cos A),$$

$$in\ the\ second\ fraction\ by\ (1-\cos A))=\frac{\sin A\,(1+\cos A)}{(1-\cos A)(1+\cos A)}+\frac{\tan A\,(1-\cos A)}{(1+\cos A)(1-\cos A)}=$$

$$=\frac{\sin A\,(1+\cos A)}{1-\cos^2 A}+\frac{\tan A\,(1-\cos A)}{1-\cos^2 A}$$

$$=(using\ the\ main\ trigonometryc\ identity\ and\ the\ definition\ of\ tan)=$$

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

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

$$=(using\ the\ definition\ of\ secans, cosec\ and\ tangent\ we\ get)$$

$$=\sec A\ cosec\ A+\tan A.$$

QED.