Trigonometric Identities Ex 6.1 Q1

Answer :

We know that, $\sin^2 A+\cos^2 A=1$

So,

$$(1-\cos^2 A)\operatorname{cosec}^2 A=\sin^2 A\operatorname{cosec}^2 A$$
$$=(\sin A\operatorname{cosec}A)^2$$
$$=\left(\sin A\times\frac{1}{\sin A}\right)^2$$
$$=(1)^2$$
$$=1$$

Trigonometric Identities Ex 6.1 Q2

Answer :

We know that, $\operatorname{cosec}^2 A-\cot^2 A=1$

So,

$$(1+\cot^2 A)\sin^2 A=\operatorname{cosec}^2 A\sin^2 A$$
$$=(\operatorname{cosec}A\sin A)^2$$
$$=\left(\frac{1}{\sin A}\times\sin A\right)^2$$
$$=(1)^2$$
$$=1$$

Trigonometric Identities Ex 6.1 Q3

Answer :

We know that, $\sin^2\theta+\cos^2\theta=1$.

So,

$$\begin{aligned}\tan^2\theta\cos^2\theta &= (\tan\theta\times\cos\theta)^2\\ &= \left(\frac{\sin\theta}{\cos\theta}\times\cos\theta\right)^2\\ &= (\sin\theta)^2\\ &= \sin^2\theta\\ &= 1-\cos^2\theta\end{aligned}$$

Trigonometric Identities Ex 6.1 Q4

Answer :

We know that, $\sin^2\theta+\cos^2\theta=1$

So,

$$\begin{aligned}\operatorname{cosec}\theta\sqrt{1-\cos^2\theta} &= \operatorname{cosec}\theta\sqrt{\sin^2\theta}\\ &= \operatorname{cosec}\theta\sin\theta\\ &= \frac{1}{\sin\theta}\times\sin\theta\\ &= 1\end{aligned}$$

********** END **********