



Question 6:

(i)

$$\begin{aligned}\text{LHS} &= \tan 35^\circ \tan 40^\circ \tan 45^\circ \tan 50^\circ \tan 55^\circ \\&= \tan 35^\circ \tan 40^\circ \tan 45^\circ \tan (90^\circ - 40^\circ) \tan (90^\circ - 35^\circ) \\&= \tan 35^\circ \tan 40^\circ \tan 45^\circ \cot 40^\circ \cot 35^\circ \\&= \left( \tan 35^\circ \times \frac{1}{\tan 35^\circ} \right) \times \left( \tan 40^\circ \times \frac{1}{\tan 40^\circ} \right) \times \tan 45^\circ \\&= 1 \times 1 \times 1 = 1 = \text{RHS}\end{aligned}$$

$\therefore \text{LHS} = \text{RHS}$

(ii)

$$\begin{aligned}\text{LHS} &= \tan 1^\circ \tan 10^\circ \tan 20^\circ \tan 70^\circ \tan 80^\circ \tan 89^\circ \\&= \tan 1^\circ \tan 10^\circ \tan 20^\circ \tan (90^\circ - 20^\circ) \tan (90^\circ - 10^\circ) \tan (90^\circ - 1^\circ) \\&= \tan 1^\circ \tan 10^\circ \tan 20^\circ \cot 20^\circ \cot 10^\circ \cot 1^\circ \\&= \tan 1^\circ \tan 10^\circ \tan 20^\circ \times \frac{1}{\tan 20^\circ} \times \frac{1}{\tan 10^\circ} \times \frac{1}{\tan 1^\circ} \\&= 1 = \text{RHS}\end{aligned}$$

$\therefore \text{LHS} = \text{RHS}$

(iii)

$$\begin{aligned}\text{LHS} &= \tan 5^\circ \tan 25^\circ \tan 30^\circ \tan 65^\circ \tan 85^\circ \\&= \tan 5^\circ \tan 25^\circ \times \tan 30^\circ \tan (90^\circ - 25^\circ) \tan (90^\circ - 30^\circ) \\&= \tan 5^\circ \tan 25^\circ \times \tan 30^\circ \times \cot 25^\circ \cot 30^\circ \\&= \tan 5^\circ \tan 25^\circ \times \frac{1}{\sqrt{3}} \times \frac{1}{\tan 25^\circ} \times \frac{1}{\tan 5^\circ} = \frac{1}{\sqrt{3}} \\&= \text{RHS}\end{aligned}$$

$\therefore \text{LHS} = \text{RHS}$

(iv)  $\text{LHS} = \cot 10^\circ \cot 20^\circ \cot 60^\circ \cot 70^\circ \cot^\circ$

$$\begin{aligned}&= \cot 10^\circ \cot 20^\circ \cot 60^\circ \cot (90^\circ - 20^\circ) \cot (90^\circ - 10^\circ) \\&= \cot 10^\circ \cot 20^\circ \cot 60^\circ \tan 20^\circ \tan 10^\circ \\&= \frac{1}{\tan 10^\circ} \times \frac{1}{\tan 20^\circ} \times \frac{1}{\sqrt{3}} \times \tan 20^\circ \times \tan 10^\circ = \frac{1}{\sqrt{3}} \\&= \text{RHS}\end{aligned}$$

$\therefore \text{LHS} = \text{RHS}$

(v)  $\text{cosec} 15^\circ \text{cosec} 35^\circ \text{cosec} 55^\circ \text{cosec} 60^\circ \text{cosec} 75^\circ$

$$\begin{aligned}&= \cos 15^\circ \cos 35^\circ \sec 35^\circ \cos 60^\circ \sec 15^\circ \\&= \cos 15^\circ \cos 35^\circ \sec 35^\circ \cos 60^\circ \sec 15^\circ \\&= \cos 15^\circ \cos 35^\circ \times \frac{1}{\cos 35^\circ} \times \frac{1}{2} \times \frac{1}{\cos 15^\circ} = \frac{1}{2} = \text{RHS}\end{aligned}$$

$\therefore \text{LHS} = \text{RHS}$

\*\*\*\*\* END \*\*\*\*\*