

CLASS 10 · HOTS · OLYMPIAD PREPARATION · DPP SHEET

Chapter 8: HOTS: Introduction to Trigonometry (Class 10)

Daily practice problems: 8 questions with an answer key

Try every question on your own first. The answer key is on the last page.

1. If $\tan \theta = \frac{5}{12}$, find $\sin \theta + \cos \theta$.
2. Show that $(1 - \cos^2 \theta)(1 + \cot^2 \theta) = 1$.
3. If $\sin \theta - \cos \theta = \frac{1}{5}$, find $\sin \theta \cos \theta$.
4. If $\sec \theta + \tan \theta = 2$, find $\sin \theta$.
5. Evaluate $\tan 10^\circ \tan 20^\circ \tan 70^\circ \tan 80^\circ$.
6. Simplify $\frac{\sin \theta}{1 + \cos \theta} + \frac{1 + \cos \theta}{\sin \theta}$.
7. Evaluate $\sin 30^\circ \cos 60^\circ + \cos 30^\circ \sin 60^\circ$.
8. If $\cos \theta = \frac{8}{17}$, find the value of $\frac{1 - \tan^2 \theta}{1 + \tan^2 \theta}$.

Answer Key

1. $\frac{17}{13}$.
2. $\sin^2 \theta \times \operatorname{cosec}^2 \theta = 1$.
3. $\frac{12}{25}$.
4. $\frac{3}{5}$.
5. 1 (since $\tan 10^\circ \tan 80^\circ = 1$ and $\tan 20^\circ \tan 70^\circ = 1$).
6. $2 \operatorname{cosec} \theta$.
7. 1.
8. $-\frac{161}{289}$ (this equals $2 \cos^2 \theta - 1$).

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