

SRI SHARADA VIDYA NIKETANA

WORK SHEET-4- 2021-22

Class:X

Sub: Geometry [RS]

1. Prove that $\tan 1^\circ \tan 2^\circ \tan 3^\circ \dots \tan 89^\circ = 1$.
2. Prove that $\tan 7^\circ \tan 23^\circ \tan 60^\circ \tan 67^\circ \tan 83^\circ = \sqrt{3}$.
3. Prove that $\cot 12^\circ \cot 38^\circ \cot 52^\circ \cot 60^\circ \cot 78^\circ = \frac{1}{\sqrt{3}}$.
4. Evaluate the following:
$$\frac{\sec 39^\circ}{\operatorname{cosec} 51^\circ} + \frac{2}{\sqrt{3}} \cdot \tan 17^\circ \tan 38^\circ \tan 60^\circ \tan 52^\circ \tan 73^\circ - 3(\sin^2 31^\circ + \sin^2 59^\circ).$$
5. Evaluate: $\frac{\tan 50^\circ + \sec 50^\circ}{\cot 40^\circ + \operatorname{cosec} 40^\circ} + \cos 40^\circ \operatorname{cosec} 50^\circ$.
6. Evaluate: $\sin^2 65^\circ + \sin^2 25^\circ$.
7. Evaluate: $\cos^2 17^\circ - \sin^2 73^\circ$.
8. Evaluate: $\operatorname{cosec}^2 67^\circ - \tan^2 23^\circ$.
9. Evaluate: $\sec^2 36^\circ - \cot^2 54^\circ$.
10. Evaluate: $\frac{2(\sin^2 63^\circ + \sin^2 27^\circ) + 1}{3(\cos^2 17^\circ + \cos^2 73^\circ) - 2}$.
11. Prove that $\sin(50^\circ + \theta) - \cos(40^\circ - \theta) = 0$
12. Prove that $\operatorname{cosec}(65^\circ + \theta) - \sec(25^\circ - \theta) = 0$
13. If $\sin 3A = \cos(A - 10^\circ)$, where $3A$ is an acute angle, then find the value of A .
14. If $\tan 2A = \cot(A - 21^\circ)$, where $2A$ is an acute angle, then find the value of A .
15. If $\sec 5A = \operatorname{cosec}(A - 30^\circ)$, where $5A$ is an acute angle, then find the value of A .
16. If $\sin(\theta + 34^\circ) = \cos \theta$ and $(\theta + 34^\circ)$ is acute, find the value of θ .
17. If $\sin A = \cos B$ and A and B are acute angles, prove that $(A+B) = 90^\circ$.
18. Prove that $\tan 35^\circ \tan 40^\circ \tan 45^\circ \tan 50^\circ \tan 55^\circ = 1$
19. Prove that $\cos 15^\circ \cos 35^\circ \operatorname{cosec} 55^\circ \cos 60^\circ \operatorname{cosec} 75^\circ = \frac{1}{2}$.
20. Prove that $\operatorname{cosec}(65^\circ + \theta) - \sec(25^\circ - \theta) - \tan(55^\circ - \theta) + \cot(35^\circ + \theta) = 0$