INDIAN SCHOOL NIZWA - WORKSHEET

MATHEMATICS
CH:8-TRIGONOMETRY

Name: _____ Date:_____ Class: X Sec: ___

1. If $\sec\theta - \tan\theta = 4$ find $\sec\theta + \tan\theta$.

2. If $3\tan\theta = \sqrt{3}$, find $\sin\theta$

3. Find the maximum value of cosec

   If $2\sin 3\theta = 1$, find θ.

4. Without using trigonometric tables, evaluate
$$\frac{\sec^2\theta - \cot^2(90-\theta)}{3\left(\sin^2 32° + \sin^2 58\right)} - \frac{2\cot^2 45°\sec^2 32°\sin^2 58°}{-\operatorname{cosec}^2 40 + \tan^2 50}$$

5. Show that $\dfrac{\cos\theta - 2\cos^3\theta}{2\sin^3\theta - \sin\theta} = \cot\theta$

6. Evaluate : $\dfrac{\cot^2 30° + 3\cos^2 45° + 2\operatorname{cosec}^2 60° + 3\sin^2 30°}{\sec^2 60° + \operatorname{cosec} 30° - \tan^2 60°}$

7. $3\cot\theta = 5$, find the value of $\dfrac{3\cos\theta + 4\sin\theta}{3\cos\theta + 5\sin\theta}$

8. If $x = a + b\sec\theta$, $y = c + d\tan\theta$ prove that $\left(\dfrac{x-a}{b}\right)^2 - \left(\dfrac{y-c}{d}\right)^2 = 1$

9. Prove that $\dfrac{1}{\sin^2\theta} - \dfrac{1-\sin^2\theta}{1-\cos^2\theta} = 1$

10. Eliminate θ from the equations $x = a\sin\theta$, $y = a\cos\theta$.

11. Without using tables, evaluate $\cos(20° + \theta) - \sin(70° - \theta) + \dfrac{\cos^2 50° + \sin^2 40°}{\sin^2 50° + \cos^2 40°}$

12. Show that $\frac{\cos A}{\operatorname{cosec} A + \cot A - 1} + \frac{\sin A}{\sec A + \tan A - 1} = 1$

13. If $\sin\theta = \frac{n}{m}$, find the value of $\frac{\tan\theta + 4}{4\cot\theta + 1}$

14. Show that $(\sec\theta + \tan\theta)^2 = \frac{1+\sin\theta}{1-\sin\theta}$

15. Show that $\sin^6\theta + \cos^6\theta = 1 - 3\sin^2\theta\cos^2\theta$

16. If $\sin\theta + \sin^2\theta = 1$, prove that
$\cos^{12}\theta + 3\cos^{10}\theta + 3\cos^8\theta + \cos^6\theta + 2\cos^4\theta + 2\cos^2\theta - 2 = 1$