

ONE TWO ACADEMY
STD 10 MATHEMATICS
TRIGONOMETRY I (Ex 6.1)

Total:- 25 marks**Time:- 45 minutes****Answer the following questions:****4 x 1 = 4**

1. Find $\tan\theta \cdot \tan(90^\circ - \theta)$.
2. When $\sin\theta = \cos\theta$?
3. Prove that $\frac{\sin^2\theta}{\cos\theta} = \tan\theta \sin\theta$.
4. $(\sec A + \tan A)(\sec A - \tan A) = ?$

Answer any three of the following questions:-**3 x 2 = 6**

5. Prove that $\frac{1 - \tan^2\theta}{\cot^2\theta - 1} = \tan^2\theta$.
6. Prove that $\frac{\sin^3 A + \cos^3 A}{\sin A + \cos A} = 1 - \sin A \cos A$.
7. If $\sin\theta + \cos\theta = \sqrt{3}$, then find the value of $\tan\theta + \cot\theta$.
8. Prove that $\frac{\sin A}{1 + \cos A} = \frac{1 - \cos A}{\sin A}$.

Answer any three of the following questions:-**3 x 5 = 15**

9. Prove that $\sqrt{\frac{1 + \sin\theta}{1 - \sin\theta}} + \sqrt{\frac{1 - \sin\theta}{1 + \sin\theta}} = 2 \sec\theta = \sqrt{\frac{1 + \sin\theta}{1 - \sin\theta}} + \frac{\cos\theta}{1 + \sin\theta}$.
10. Prove that $\frac{\sin A}{\sec A + \tan A - 1} + \frac{\cos A}{\csc A + \cot A - 1} = 1$.
11. Prove that $\sec^6\theta = \tan^6\theta + 3\tan^2\theta \sec^2\theta + 1$.
12. If $\frac{\cos\theta}{1 + \sin\theta} = \frac{1}{a}$, then prove that $\frac{a^2 - 1}{a^2 + 1} = \sin\theta$