Subject – Maths. Class- 10th Topic – Ch. 7 Trigonometric Identities

Refer to Video #11 & 12 and solve the following exercise:

EXERCISE 7.2

Find the values of the following :

1. (i) $\frac{\cos 37^\circ}{\sin 53^\circ}$ (ii) $\frac{\operatorname{cosec} 32^\circ}{\sec 58^\circ}$

   (iii) $\frac{\tan 10^\circ}{\cot 80^\circ}$ (iv) $\frac{\cos 19^\circ}{\sin 71^\circ}$

2. (i) $\operatorname{cosec} 25^\circ - \sec 65^\circ$

   (ii) $\cot 34^\circ - \tan 56^\circ$

   (iii) $\frac{\sin 36^\circ}{\cos 54^\circ} - \frac{\sin 54^\circ}{\cos 36^\circ}$

   (iv) $\sin\theta \cos(90^\circ - \theta) + \cos\theta \sin(90^\circ - \theta)$

3. (i) $\sin 70^\circ \sin 20^\circ - \cos 20^\circ \operatorname{cosec} 70^\circ$

   (ii) $\frac{2\cos 67^\circ}{\sin 23^\circ} - \frac{\tan 40^\circ}{\cot 50^\circ} - \cos 60^\circ$

4. (i) $\left(\frac{\sin 35^\circ}{\cos 55^\circ}\right)^2 + \left(\frac{\cos 55^\circ}{\sin 35^\circ}\right)^2 - 2\cos 60^\circ$

   (ii) $\left(\frac{\sin 27^\circ}{\cos 63^\circ}\right)^2 + \left(\frac{\cos 63^\circ}{\sin 27^\circ}\right)^2$

5. (i) $\tan 12^\circ \cot 38^\circ \cot 52^\circ \cot 60^\circ \cot 78^\circ$

   (ii) $\tan 5^\circ \tan 25^\circ \tan 30^\circ \tan 65^\circ \tan 85^\circ$

6. Express the following in terms of the trigonometric ratios of angles between 0° and 45°.

   (i) $\sin 81^\circ + \sin 71^\circ$

   (ii) $\tan 68^\circ + \sec 68^\circ$

Prove the following :

7. $\sin 65° + \cos 25° = 2 \cos 25°$

8. $\sin 35° \sin 55° - \cos 35° \cos 55° = 0$

9. $\frac{\cos 70°}{\sin 20°} + \frac{\cos 59°}{\sin 31°} - 8 \sin^2 30° = 0$

10. $\sin (90° - \theta) \cos (90° - \theta) = \frac{\tan \theta}{1 + \tan^2 \theta}$

11. $\frac{\cos(90° - \theta)\cos \theta}{\tan \theta} + \cos^2(90° - \theta) = 1$

12. $\frac{\tan(90° - \theta)\cot \theta}{\operatorname{cosec}^2 \theta} - \cos^2 \theta = 0$

13. $\frac{\cos(90° - \theta)\sin(90° - \theta)}{\tan(90° - \theta)} = \sin^2 \theta$

14. $\frac{\sin \theta \cos(90° - \theta)\cos \theta}{\sec(90° - \theta)} + \frac{\cos \theta \sin(90° - \theta)\sin \theta}{\operatorname{cosec}(90° - \theta)}$
$= \sin \theta \cos \theta$

15. If $\sin 3\theta = \cos (\theta - 6°)$ where 3θ and $(\theta - 6°)$ are acute angles then find the value of θ.

16. If $\sec 5\theta = \operatorname{cosec} (\theta - 36°)$ where 5θ is an acute angle then find the value of θ.