

**Work sheet -3**

**Trigonometric Functions**

**SAQ (3 marks)**

1. Find the principal solution of the equation tan x = $\frac{1}{√3}$

2. Prove $\frac{sinsin x-sinsin 3x }{x-x }$ = 2sin x

3. Prove that : sin x + sin 3x + sin 5x + sin 7x = 4cos x cos 2x sin 4x

4. Prove that: sin 20o sin 40o sin 80o = $\frac{√3}{8}$

5. Prove that: $\frac{sinsin 5x +3x }{cos5x+coscos 3x }$ = tan 4x

6. Find the radian measure for 33o 15'.

7. Solve: sec x cos 5x + 1 = 0, 9 < x< $\frac{π}{2}$ .

8. Prove that: 4cos 12° cos 48° cos 72° = cos 36°

9. Solve : cos x + cos 2x + cos 3x = 0

10. Prove that: sin 10° sin 30° sin 50° sin 70° = $\frac{1}{16}$

**LAQ (5 marks)**

1. Solve: 2sin2x + √3cos x + 1 = 0

2. Prove that: tan 20° tan 30° tan 40° tan 80° = 1

3. Find the angle in radian through which a pendulum swings, if its length is 75 cm and

 tip describes an arc of length 21 cm.

4. Find the principal and general solution of the equation: sin x = $\frac{√3}{2}$

5. Prove that: $\frac{coscos 9x -5x }{sin17x-sinsin 3x } $= − $\frac{sinsin 2x }{coscos 10x }$

6. Find the principal and general solution of the following equation: cosec x = -2

7. If $θ+ ∅= α$ and sin$θ$ = k sin$∅$ , then prove that tan$θ$ =$\frac{ksinsin α }{1+kcoscos α }$ and tan $∅$ = $\frac{sinsin α }{k+ coscos α }$

8. Prove that cos$\frac{2π}{15}$ cos$\frac{4π}{15}$ cos$\frac{8π}{15}$ cos$\frac{16π}{15}$ = $\frac{1}{16}$