SREE VIDYANIKETHAN
International School

Holiday Homework

Class: XI **Subject: Mathematics**

1. Find the most general solution of $\tan x = \frac{1}{\sqrt{3}}$, $\sec x = \frac{2}{\sqrt{3}}$

2. Solve $5\cos^2\theta + 7\sin^2\theta = 6$

3. Solve $3\sin^4 x + \cos^4 x = 1$

4. Solve $\cot x + \operatorname{cosec} x = \sqrt{3}$

5. Solve $\sin\theta + \sin 5\theta = \sin 3\theta,\ 0 < \forall < \pi$

6. α, β are the solutions of the equation $a\cos\theta + b\sin\theta = 0$, where $a, b, c \in R$, $\cos\alpha \neq \cos\beta$ and $\sin\alpha \neq \sin\beta$ then show that

   i) $\cos\alpha + \cos\beta = \frac{2ac}{a^2 + b^2}$ ii) $\cos\alpha\cos\beta = \frac{c^2 - b^2}{a^2 + b^2}$

7. If $|\tan x| = \tan x + \frac{1}{\cos x}$ and $x \in [0, 2\pi]$, find the value of x.

8. By using mathematical induction show that

   $\forall n \in N,\ \frac{1}{1.4} + \frac{1}{4.7} + \frac{1}{7.10} + \text{------upto n terms} = \frac{n}{3n+1}$

9. Using mathematical induction prove that $49^n + 16n - 1$ is divisible by 64, $\forall n \in N$

10. $3.5^{2n+1} + 2^{3n+1}$ is divisible by 17.