**29. Find the general solution of the equation ($\sqrt{3}$ – 1) cos θ + ($\sqrt{3}$ + 1) sin θ = 2**

**[Hint: Put $\sqrt{3}$ – 1 = r sin α, $\sqrt{3}$ + 1 = r cos α which gives tan α = tan((π/4) – (π/6)) α = π/12]**

**Solution:**

Let, $r \sin\alpha = \sqrt{3} - 1$ and $r \cos\alpha = \sqrt{3} + 1$

Therefore, $r = \sqrt{\{(\sqrt{3} - 1)^2 + (\sqrt{3} + 1)^2\}} = \sqrt{8} = 2\sqrt{2}$

And, $\tan\alpha = (\sqrt{3} - 1) / (\sqrt{3} + 1)$

Therefore, $r(\sin\alpha \cos\theta + \cos\alpha \sin\theta) = 2$

$\Rightarrow r \sin(\theta+\alpha) = 2$

$\Rightarrow \sin(\theta+\alpha) = 1/\sqrt{2}$

$\Rightarrow \sin(\theta+\alpha) = \sin(\pi/4)$

$\Rightarrow \theta+\alpha = n\pi + (-1)^n (\pi/4), n \in Z$

$\Rightarrow \theta = n\pi + (-1)^n (\pi/4) - (\pi/12), n \in Z$