



BEYOND EXCELLENCE -48

JANAKA RODRIGO

Where the extreme challenges excellence.

Let $U_n = \int_0^{\pi/2} \frac{\sin(2n+1)\theta}{\sin\theta} d\theta$, find $U_n - U_{n-1}$. Hence show that

$$U_n = \frac{\pi}{2}; n \in \mathbb{Z}^+ \text{ prove that, } \int_0^{\pi/2} \frac{\sin^2 n\theta}{\sin^2 \theta} d\theta = \frac{n\pi}{2}; n \in \mathbb{Z}^+$$

$U_n = \int_0^{\pi/2} \frac{\sin(2n+1)\theta}{\sin\theta}$ ලෙස ගනිමු. $U_n - U_{n-1}$ ලබා ගන්න. එනමින්

$n \in \mathbb{Z}^+$ විට $U_n = \frac{\pi}{2}$ බව පෙන්වන්න. $n \in \mathbb{Z}^+$ විට

$$\int_0^{\pi/2} \frac{\sin^2 n\theta}{\sin^2 \theta} d\theta = \frac{n\pi}{2}; n \in \mathbb{Z}^+ \text{ බව පෙන්වන්න.}$$