

Calculate the value of α if $(\sin \alpha - 1)(2 \cos \alpha - 1) = 0$

Solution:

$$(\sin \alpha - 1)(2 \cos \alpha - 1) = 0 \Rightarrow \sin \alpha - 1 = 0 \quad (1)$$

or $2 \cos \alpha - 1 = 0 \quad (2)$

Solve equation 1:

$$\sin \alpha - 1 = 0 \Rightarrow \sin \alpha = 1 \Rightarrow \alpha = \frac{\pi}{2} + 2\pi n, \quad n \in \mathbb{Z}$$

Solve equation 2:

$$2 \cos \alpha - 1 = 0 \Rightarrow \cos \alpha = \frac{1}{2} \Rightarrow \alpha = \pm \frac{\pi}{3} + 2\pi n, \quad n \in \mathbb{Z}$$

Answer:

Solutions of equation:

$$\alpha = \frac{\pi}{2} + 2\pi n, \quad n \in \mathbb{Z}$$

$$\alpha = \pm \frac{\pi}{3} + 2\pi n, \quad n \in \mathbb{Z}$$