

If α and β are the roots of the equation $x^2 - x + 1 = 0$, then $\alpha^{2009} + \beta^{2009} =$

(a) -2

(b) -1

(c) 1

(d) 2

Solution:

Given $x^2 - x + 1 = 0$

Using quadratic formula, we get $x = (1 \pm i\sqrt{3})/2$

$\alpha = -\omega, \beta = -\omega^2$

$\alpha^{2009} + \beta^{2009} = -\omega^{2009} + (-\omega^2)^{2009}$

$= -(\omega^2 + \omega)$

$= 1$

Hence option c is the answer.