

If α and β are the complex cube roots of unity, then $\alpha^4 + \beta^4 + \alpha^{-1} + \beta^{-1}$.

α and β are the complex cube roots of unity.

Hence,

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

Since,

$$\Rightarrow \alpha^4 + \beta^4 + \alpha^{-1} + \beta^{-1}$$

$$\Rightarrow \alpha^4 + \beta^4 + \frac{1}{\alpha} + \frac{1}{\beta}$$

$$\Rightarrow \alpha^4 + \beta^4 + \frac{\alpha + \beta}{\alpha\beta}$$

Therefore,

$$\Rightarrow \omega^4 + (\omega^2)^4 + \frac{\omega + \omega^2}{\omega\omega^2}$$

$$\Rightarrow \omega + \omega^8 + \frac{-1}{\omega^3}$$

$$\Rightarrow \omega + \omega^2 + \frac{-1}{1}$$

$$\Rightarrow -1 - 1$$

$$\Rightarrow -2$$