

# Quaternion

March 2, 2020

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First,

$$i^2 = j^2 = k^2 = ijk = -1$$

Here, from Definition series

$$\begin{array}{l} i = 2 \quad j = 3 \\ k = 4 \left( \because 4^{\frac{1}{2}} = 4^{\frac{3}{2}} = 64 = 4 \right) \end{array}$$



$$\begin{array}{l} i^2 = 4 = -1 \\ j^2 = 9 = 4 = -1 \\ k^2 = 64 = 4 = -1 \\ ijk = 2 \times 3 \times 4 = 24 = 4 = -1 \end{array}$$

*That's all (proof end)*