$a = \frac{-1+\sqrt{3}i}{2}$ cube root of 1.

Show $a^3 = 1$

$$a^3 = a^2 a = \left(\frac{-1+\sqrt{3}i}{2}\right)^2 \left(\frac{-1+\sqrt{3}i}{2}\right)$$

$$a^2 = \left(\frac{-1+\sqrt{3}i}{2}\right)^2 = \frac{(-1+\sqrt{3}i)^2}{4} = \frac{1-2\sqrt{3}i+3i^2}{4} = \frac{-2\sqrt{3}i-2}{4} = \frac{-1-\sqrt{3}i}{2}$$

$$a^2 a = \left(\frac{-1-\sqrt{3}i}{2}\right)\left(\frac{-1+\sqrt{3}i}{2}\right)$$

$$= \frac{(-1-\sqrt{3}i)(-1+\sqrt{3}i)}{4}$$

$$= \frac{(-1)^2-(\sqrt{3}i)^2}{4} = \frac{1+3}{4} = \underline{\underline{1}}$$

$\square$