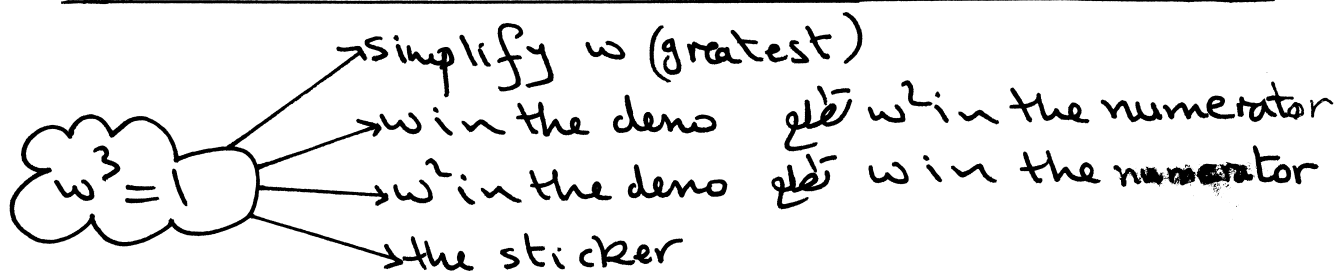


## the Cubic root of unity

$$1, \frac{1}{2} + \frac{\sqrt{3}}{2}i, \frac{1}{2} - \frac{\sqrt{3}}{2}i$$

$$1, \omega, \omega^2$$

$\omega^2$  is the conjugate of  $\omega$



$$1 + \omega + \omega^2 = \text{Zero}$$

an two have the same sign  
the third with diff sign

$$\frac{\omega - \omega^2}{\omega^2 - \omega} = \pm \sqrt{3}i \quad \text{the last result.}$$

Solve  $z^3 = 1$  in "C"  
solution

$$\frac{a+s}{\omega} = \frac{1(a+s)}{\omega} = \underline{\hspace{2cm}}$$

$$\frac{K}{\omega^2} =$$

$$\frac{a + b\omega}{a\omega^2 + b} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}} =$$

$$\frac{3\omega^2 - 5}{3 - 5\omega} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}} =$$

$$\frac{a - 3\omega}{a\omega^2 - 3} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}} =$$

$$\frac{5}{w^5} = \frac{5}{w^5} =$$

$$\frac{3}{w^7} = \frac{3}{w^7} =$$

$$\frac{5-w}{5w^2-1} = \frac{5-w}{5w^2-1} =$$

$$w+w^2 =$$

$$1+w =$$

$$1+w^2 =$$

$$-1-w =$$

$$-1-w^2 =$$

$$-w-w^2 =$$

$$3+3w =$$

$$3w^2+3 =$$

$$5w^2+5w =$$

$$-2w^2-2 =$$

$$iw+iw^2 =$$

$$aw^2+a =$$

$$1+3w+3w^2 =$$

$$5-2w-2w^2 =$$

$$3+2w+3w^2 =$$

$$5+5w-2w^2 =$$

$$4+3w+2w^2 =$$

$$3-w-4w^2 =$$

$$\frac{3}{w^6} - \frac{2}{w^7} - \frac{2}{w^8} =$$

||

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2]

Simplify  $\left( \frac{x+yw}{xw^2+y} - \frac{aw^2+b}{a+bw} \right)^4$

Solution

$$\left( \text{-----} - \text{-----} \right)^4$$

$$\left( \text{-----} - \text{-----} \right)^4$$

Prove that  $\left( \frac{a+wb+w^2c}{w^2a+b+bw} - \frac{c+aw^2+bw}{cw+bw^2+a} \right)^8 = 81$

Solution

$$\left( \text{-----} - \text{-----} \right)^8$$

$$\left( \text{-----} - \text{-----} \right)^8$$

Find  $\left[ \frac{1}{1+3w^2} - \frac{1}{1+3w} \right]^2$

Solution

Prove that  $\left( \frac{w}{1+2w} \right)^2 + \left( \frac{1+2w^2}{w^2} \right)^2 = \frac{-10w^2}{3}$

Solution