

$$z^2 = \frac{1-i}{1+i}$$

Fixa till högerledet

$$\frac{1-i}{1+i} = \frac{(1-i)(1-i)}{(1+i)(1-i)} = \frac{-2i}{2} = -i$$

så

$$z^2 = -i$$

Sedan "som vanligt"

$$z = x+iy \Rightarrow (x+iy)^2 = -i$$

$$x^2 - y^2 + 2xyi = -i$$

$$\begin{cases} x^2 - y^2 = 0 \\ 2xy = -1 \end{cases}$$

$$y = -\frac{1}{2x} \Rightarrow x^2 - \frac{1}{4x^2} = 0$$

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$\Leftrightarrow$

$$4x^4 - 1 = 0$$

$\Leftrightarrow$

$$x = \pm \frac{1}{\sqrt{2}}$$

$$x = \frac{1}{\sqrt{2}} \Rightarrow y = -\frac{1}{2 \cdot \frac{1}{\sqrt{2}}} = -\frac{1}{\sqrt{2}}$$

$$x = -\frac{1}{\sqrt{2}} \Rightarrow y = -\frac{1}{2 \cdot \left(-\frac{1}{\sqrt{2}}\right)} = \frac{1}{\sqrt{2}}$$

$$\text{så } z_1 = \frac{1}{\sqrt{2}} - i \frac{1}{\sqrt{2}}, \quad z_2 = -\frac{1}{\sqrt{2}} + i \frac{1}{\sqrt{2}}$$

OBS  $\frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$  så facit har  
också rätt