

1103b

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09:07

$$z^2 + 4z + 4 + 2i = 0$$

Kvadratkomplettera

$$(z+2)^2 + 2i = 0$$

$\Leftrightarrow$

$$(z+2)^2 = -2i$$

Sätt  $z+2 = w$  så

$$w^2 = -2i$$

Sätt  $w = x+iy$  så

$$(x+iy)^2 = -2i$$

$\Leftrightarrow$

$$(\sqrt{2}, \dots) = ()$$

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

$$y = -\frac{1}{x} \quad \text{ger} \quad x^2 - \frac{1}{x^2} = 0$$
$$\Leftrightarrow$$

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

$$x = \pm 1$$

$$x = 1 \quad \text{ger} \quad y = -1$$

$$x = -1 \quad \text{ger} \quad y = 1$$

$$\text{så} \quad w_1 = 1 - i, \quad w_2 = -1 + i$$

$$w = z + 2 \quad \Leftrightarrow \quad z = w - 2 \quad \text{så}$$

$$z_1 = -1 - i, \quad z_2 = -3 + i$$