

4811

Ekvationen  $z^6 = w$  har en rot  $z = 3 \left( \cos \frac{\pi}{4} + i \sin \frac{\pi}{4} \right)$ .

Vi får då

$$\begin{aligned} w = z^6 &= \left( 3 \left( \cos \frac{\pi}{4} + i \sin \frac{\pi}{4} \right) \right)^6 = 3^6 \left( \cos \frac{6\pi}{4} + i \sin \frac{6\pi}{4} \right) \\ &= 729 \left( \underbrace{\cos \frac{3\pi}{2}}_0 + i \underbrace{\sin \frac{3\pi}{2}}_{-1} \right) \\ &= -729i \end{aligned}$$

de Moivre's formel

Sätt in den kända roten

Svar:  $-729i$