6.27

måndag 19 december 2022 13:58

$$\left(\frac{1}{2}+i\frac{\sqrt{3}}{2}\right)^{100}=z^{100}$$

$$|z|=\sqrt{\frac{1}{4}+\frac{3}{4}}=1$$

$$\theta=\pi/3$$

$$z=e^{i\pi/3}$$

$$z^{100}=e^{i\,100\,\pi/3}=\cos\frac{100\pi}{3}+i\sin\frac{100\pi}{3}=\cos\frac{4\pi}{3}+i\sin\frac{4\pi}{3}$$

$$25\cdot\frac{4\pi}{3}=100\pi/3,\qquad\frac{6\pi\cdot16+4\pi}{3}=\frac{100\pi}{3}$$

Så: $z=-\frac{1}{2}-i\frac{\sqrt{3}}{2}$