

LÖSUNG ZU 970:

$$z^3 = 3 + 5i$$

Die komplexe Zahl in Polardarstellung angeben:

$$r = \sqrt{3^2 + 5^2} = \sqrt{34}$$

$$\varphi = \arctan\left(\frac{5}{3}\right) \approx 59,04^\circ$$

$$360^\circ : 3 = 120^\circ$$

$$z_1 = \left(\sqrt[3]{\sqrt{34}}; \frac{59,04^\circ}{3}\right) = (\sqrt[6]{34}; 19,68^\circ) = \sqrt[6]{34} \cdot (\cos(19,68^\circ) + i \cdot \sin(19,68^\circ)) \approx 1,69 + 0,61i$$

$$z_2 = \left(\sqrt[3]{\sqrt{34}}; \frac{59,04^\circ}{3} + 120^\circ\right) = (\sqrt[6]{34}; 139,68^\circ) = \sqrt[6]{34} \cdot (\cos(139,68^\circ) + i \cdot \sin(139,68^\circ)) \approx -1,37 + 1,16i$$

$$z_3 = \left(\sqrt[3]{\sqrt{34}}; \frac{59,04^\circ}{3} + 2 \cdot 120^\circ\right) = (\sqrt[6]{34}; 259,68^\circ) = \sqrt[6]{34} \cdot (\cos(259,68^\circ) + i \cdot \sin(259,68^\circ)) \approx -0,32 - 1,77i$$

