

Aufgabe 8

$$a) \quad z_1 = -1 \in \mathbb{C} \quad z_1 = -1 + 0 \cdot i$$

$$z = z_1^{1/5} = \sqrt[5]{-1}$$

$$|z_1| = \sqrt{(-1)^2 + 0^2} = 1 \quad \sqrt[5]{1} = 1$$

$$\varphi = 180^\circ \quad \text{bzw. } \pi$$

$$z_{11} = 1 \cdot e^{i36^\circ}$$

$$z_{12} = 1 \cdot e^{i(36^\circ + 72^\circ)} = e^{i108^\circ}$$

$$z_{13} = 1 \cdot e^{i(36^\circ + 2 \cdot 72^\circ)} = e^{i180^\circ}$$

$$z_{14} = 1 \cdot e^{i(36^\circ + 3 \cdot 72^\circ)} = e^{i252^\circ}$$

$$z_{15} = 1 \cdot e^{i(36^\circ + 4 \cdot 72^\circ)} = e^{i324^\circ}$$

$$z_{11} = \cos 36^\circ + i \sin 36^\circ = 0.809 + 0.587i$$

$$z_{12} = \cos 108^\circ + i \sin 108^\circ = -0.309 + 0.951i$$

$$z_{13} = \cos 180^\circ + i \sin 180^\circ = -1 + 0 \cdot i = -1$$

$$z_{14} = \cos 252^\circ + i \sin 252^\circ = -0.309 - 0.951i$$

$$z_{15} = \cos 324^\circ + i \sin 324^\circ = 0.809 - 0.587i$$