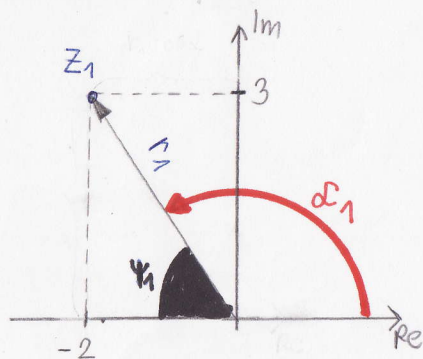


II. TÉRNEGYED



• Algebrai alak

$$Z_1 = -2 + 3i$$

• Trigonometrikus alak

$$\operatorname{tg} \psi_1 = \frac{\text{képzelt}}{\text{valós}} = \frac{3}{-2} = 1,5$$

$$\psi_1 = \arctg 1,5 = 56,3099^\circ$$

az ábra alapján

$$\alpha_1 = \pi - \psi_1 = 180^\circ - 56,3099^\circ = 123,69^\circ$$

$$r_1 = \sqrt{2^2 + 3^2} = 3,6055$$

$$Z_1 = r_1 \cdot (\cos \alpha_1 + i \cdot \sin \alpha_1)$$

$$Z_1 = 3,6055 \cdot (\cos 123,69^\circ + i \cdot \sin 123,69^\circ)$$

• Exponenciális alak

$$\alpha_1 = 123,69 \cdot \frac{\pi}{180^\circ} = 2,158 \text{ rad}$$

$$Z_1 = r_1 \cdot e^{i \cdot \alpha_1}$$

$$Z_1 = 3,6055 \cdot e^{i \cdot 2,158}$$

I. TÉRNEGYED

• Trigonometrikus alak

$$\operatorname{tg} \psi_1 = \operatorname{tg} \alpha_1 = \frac{\text{képzelt}}{\text{valós}} = \frac{2}{4} = 0,5$$

$$\psi_1 = \alpha_1 = \arctg 0,5 = 26,565^\circ$$

$$r_1 = \sqrt{2^2 + 4^2} = \sqrt{20} = 4,4721$$

$$Z_1 = r_1 \cdot (\cos \alpha_1 + i \cdot \sin \alpha_1)$$

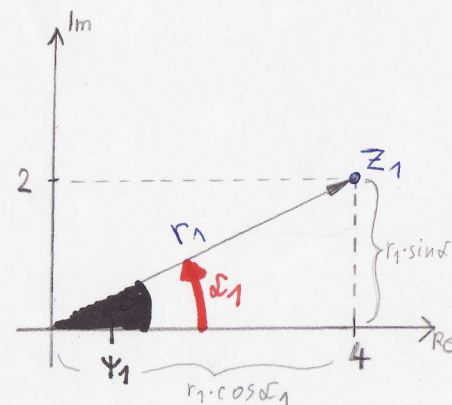
$$Z_1 = 4,4721 \cdot (\cos 26,565^\circ + i \cdot \sin 26,565^\circ)$$

• Exponenciális alak

$$\psi_1 = \alpha_1 = 26,565 \cdot \frac{\pi}{180^\circ} = 0,463647 \text{ rad}$$

$$Z_1 = r_1 \cdot e^{i \alpha_1}$$

$$Z_1 = 4,4721 \cdot e^{i \cdot 0,463647}$$



• Algebrai alak

$$Z_1 = 4 + 2i$$

• Trigonometrikus alak

$$\operatorname{tg} \psi_1 = \frac{\text{képzelt}}{\text{valós}} = \frac{-4}{-2} = 2$$

$$\psi_1 = \arctg 2 = 63,4349^\circ$$

az ábra alapján

$$\alpha_1 = \pi + \psi_1 = 180^\circ + 63,4349^\circ = 243,4349^\circ$$

$$r_1 = \sqrt{2^2 + 4^2} = 4,4721$$

$$Z_1 = r_1 \cdot (\cos \alpha_1 + i \cdot \sin \alpha_1)$$

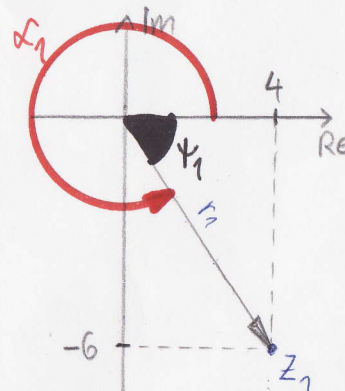
$$Z_1 = 4,4721 \cdot (\cos 243,4349^\circ + i \cdot \sin 243,4349^\circ)$$

• Exponenciális alak

$$\alpha_1 = 243,4349 \cdot \frac{\pi}{180^\circ} = 4,2487 \text{ rad}$$

$$Z_1 = r_1 \cdot e^{i \alpha_1}$$

$$Z_1 = 4,4721 \cdot e^{i \cdot 4,2487}$$



• Algebrai alak

$$Z_1 = -2 - 4i$$

• Trigonometrikus alak

$$\operatorname{tg} \psi_1 = \frac{\text{képzelt}}{\text{valós}} = \frac{-6}{4} = 1,5$$

$$\psi_1 = \arctg 1,5 = 56,31^\circ$$

az ábra alapján

$$\alpha_1 = 2\pi - \psi_1 = 360^\circ - 56,31^\circ = 303,69^\circ$$

$$r_1 = \sqrt{4^2 + 6^2} = 7,211$$

$$Z_1 = r_1 \cdot (\cos \alpha_1 + i \cdot \sin \alpha_1)$$

$$Z_1 = 7,211 \cdot (\cos 303,69^\circ + i \cdot \sin 303,69^\circ)$$

• Exponenciális alak

$$\alpha_1 = 303,69 \cdot \frac{\pi}{180^\circ} = 5,3 \text{ rad}$$

$$Z_1 = r_1 \cdot e^{i \alpha_1}$$

$$Z_1 = 7,211 \cdot e^{i \cdot 5,3}$$

III. TÉRNEGYED

IV. TÉRNEGYED