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Opgave 030

$$\text{Define: } a_z = 4 \cdot \sqrt{3}$$

$$\text{Define: } b_z = -4$$

$$\text{Define: } a_w = 0$$

$$\text{Define: } b_w = 8$$

$$z = a_z + i \cdot b_z \approx -4 \cdot i + 6,928203$$

$$w = a_w + i \cdot b_w = 8 \cdot i$$

$$\text{Define: } r_z = \sqrt{a_z^2 + b_z^2}$$

$$r_z = 8$$

$$\text{Define: } z_\theta = \tan^{-1}\left(\frac{b_z}{a_z}\right)$$

$$z_\theta \approx -0,5235988$$

$$\text{Define: } r_w = \sqrt{a_w^2 + b_w^2}$$

$$r_w = 8$$

$$\text{Define: } w_\theta = \tan^{-1}\left(\frac{b_w}{a_z}\right)$$

$$w_\theta \approx 0,8570719$$

$$z \cdot w = r_z \cdot r_w \cdot (\cos(z_\theta + w_\theta) + i \cdot \sin(z_\theta + w_\theta)) \approx 20,94892 \cdot i + 60,47432$$

$$\frac{z}{w} = \frac{r_z}{r_w} \cdot (\cos(z_\theta - w_\theta) + i \cdot \sin(z_\theta - w_\theta)) \approx -0,9819805 \cdot i + 0,1889822$$

$$\frac{1}{z} = \frac{1}{r_z} \cdot (\cos(z_\theta) - i \cdot \sin(z_\theta)) \approx 0,0625 \cdot i + 0,1082532$$