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Opgave 031

$$\text{Define: } a_z = 2 \cdot \sqrt{3}$$

$$\text{Define: } b_z = -2$$

$$\text{Define: } a_w = -1$$

$$\text{Define: } b_w = 1$$

$$z = a_z + i \cdot b_z \approx -2 \cdot i + 3,464102$$

$$w = a_w + i \cdot b_w = i - 1$$

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

$$r_z = 4$$

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

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

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

$$r_w \approx 1,414214$$

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

$$w_\theta \approx 0,2810349$$

$$z \cdot w = r_z \cdot r_w \cdot (\cos(z_\theta + w_\theta) + i \cdot \sin(z_\theta + w_\theta)) \approx -1,358732 \cdot i + 5,491252$$

$$\frac{z}{w} = \frac{r_z}{r_w} \cdot (\cos(z_\theta - w_\theta) + i \cdot \sin(z_\theta - w_\theta)) \approx -2,038099 \cdot i + 1,961161$$

$$\frac{1}{z} = \frac{1}{r_z} \cdot (\cos(z_\theta) - i \cdot \sin(z_\theta)) \approx 0,125 \cdot i + 0,2165064$$