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Opgave 029

$$Define: a_z = \sqrt{3}$$
$$Define: b_z = 1$$

$$Define: a_w = 1$$
$$Define: b_w = \sqrt{3}$$

$$z = a_z + i \cdot b_z = i + \sqrt{3}$$

$$w = a_w + i \cdot b_w = \sqrt{3} \cdot i + 1$$

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

$$Define: z_\theta = \tan^{-1}\left(\frac{b_z}{a_z}\right)$$
$$z_\theta = \frac{\pi}{6}$$

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

$$Define: w_\theta = \tan^{-1}\left(\frac{b_w}{a_z}\right)$$
$$w_\theta = \frac{\pi}{4}$$

$$z \cdot w = r_z \cdot r_w \cdot (\text{COS}(z_\theta + w_\theta) + i \cdot \text{SIN}(z_\theta + w_\theta)) \approx 3{,}863703 \cdot i + 1{,}035276$$

$$\frac{z}{w} = \frac{r_z}{r_w} \cdot (\text{COS}(z_\theta - w_\theta) + i \cdot \text{SIN}(z_\theta - w_\theta)) \approx -0{,}258819 \cdot i + 0{,}9659258$$

$$\frac{1}{z} = \frac{1}{r_z} \cdot (\text{COS}(z_\theta) - i \cdot \text{SIN}(z_\theta)) = \frac{\sqrt{3}}{4} - \frac{i}{4} \approx -0{,}25 \cdot i + 0{,}4330127$$