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| | Navn: | | Skole: | |
| | Klasse: 20 | | Dato: 1. februar 2023 | Fag: Matematik A |

Opgave 029

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

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

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

$$\text{Define: } b_w = \sqrt{3}$$

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

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

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

$$r_z = 2$$

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

$$z_\theta = \frac{\pi}{6}$$

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

$$r_w = 2$$

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

$$w_\theta = \frac{\pi}{4}$$

$$z \cdot w = r_z \cdot r_w \cdot (\cos(z_\theta + w_\theta) + i \cdot \sin(z_\theta + w_\theta)) \approx 3,863703 \cdot i + 1,035276$$

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

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