

# Übungen in AlgGeo $\diamond$ Exercices en AlgGéo $\diamond$ Type F1 $\diamond$ I / 8

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**Probl. 1**  $z = 3 + 4i$

(a)  $\bar{z} = ?$

(b)  $|z| = ?$

(c)  $z^2 = ?$

(d)  $\frac{1}{z} = ?$

(e)  $\frac{1}{\bar{z}} = ?$

(f)  $\frac{1}{|z|} = ?$

(g)  $z \cdot \bar{z} = ?$

(h)  $\frac{\bar{z}}{|z|^2} = ?$

(i)  $|\bar{z}| = ?$

**Probl. 2**  $z_1 = 1 - i, z_2 = -1 + 2i$

(a)  $z_1 \cdot z_2 = ?$

(b)  $\frac{z_1}{z_2} = ?$

(c)  $|\frac{z_1}{z_2}| = ?$

(d)  $\frac{z_1 + z_2}{z_2} = ?$

(e)  $\frac{3z_1 + 2z_2}{4z_2} = ?$

(f)  $z_1^2 \cdot z_2^3 = ?$

**Probl. 3**  $z_1 = -1 - i$

(a)  $z^2 = z_1 \rightsquigarrow z = ?$

(b)  $z^3 = z_1 \rightsquigarrow z = ?$

(c)  $z^4 = z_1 \rightsquigarrow z = ?$

(d)  $z^5 = z_1 \rightsquigarrow z = ?$

**Probl. 4**  $x^2 + x + 1 = 0, x_{1,2} = ?$

**Probl. 5** (a)  $z_1 = 2 + i \Rightarrow z_1^2, z_1^3, z_1^4 = ?$

Skizze! • *Esquisse!*

(b)  $z_2 = \frac{1}{\sqrt{2}} \cdot (1 + i) \Rightarrow z_2^2, z_2^3, z_2^4 \dots z_2^M = ?$

Skizze! • *Esquisse!*