

1) Berechne für $z_1 = 3 + 2i$ und $z_2 = 2 - i$:

$$z_1 + z_2 = 3 + 2i + 2 - i = 5 + i$$

$$z_1 - z_2 = 3 + 2i - 2 + i = 1 + 3i$$

$$z_1 * z_2 = (3 + 2i)(2 - i) = 6 - 3i + 4i + 2 = 8 + i$$

$$z_1 : z_2 = \frac{3 + 2i}{2 - i} = \frac{(3 + 2i)(2 + i)}{(2 - i)(2 + i)} = \frac{6 + 3i + 4i - 2}{4 + 1} = \frac{4}{5} + \frac{7}{5}i$$

2) Gebe jeweils die konjugiert komplexe Zahl an

$$z_1 = 1 + 4i \quad \bar{z}_1 = 1 - 4i$$

$$z_2 = 5i \quad \bar{z}_2 = -5i$$

$$z_3 = 3 \quad \bar{z}_3 = 3$$

3) Berechne die Beträge

$$z_1 = 3 - 4i \quad |z_1| = \sqrt{3^2 + (-4)^2} = \sqrt{25} = 5$$

$$z_2 = 2 + i \quad |z_2| = \sqrt{2^2 + 1^2} = \sqrt{5}$$

$$z_3 = 5 - 2i \quad |z_3| = \sqrt{5^2 + (-2)^2} = \sqrt{29}$$