

b)

$$\boxed{j \cdot j = -1} \rightarrow j = \sqrt{-1} \rightarrow \sqrt{-1} \cdot \sqrt{-1} = -1 = j \cdot j = j^2$$

Beispiele:

a) $(3 - 2j) + (4 + 7j) = (3 + 4) + (-2 + 7)j = 7 + 5j$

b) $(3 - 2j) - (4 + 7j) = -1 - 9j$

c) $(3 - 2j)(4 + 7j) = 3 \cdot 4 + 3 \cdot 7j - 2j \cdot 4 - 2j \cdot 7j = 12 + 21j - 8j + 14 = 26 + 13j$

c)

$$(a + bj)(a - bj) = a^2 + abj - abj - (bj)^2 = a^2 - b^2j^2 = a^2 - b^2 \cdot (-1) = a^2 + b^2$$

$$(a + bj)(a - bj) = a^2 + b^2$$

d)

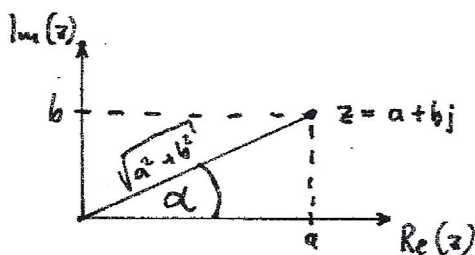
$$z = 4 - 3j \Rightarrow |z| = \sqrt{4^2 + (-3)^2} = \sqrt{25} = 5$$

$$z = -5 + 3j \Rightarrow |z| = \sqrt{(-5)^2 + 3^2} = \sqrt{34}$$

e)

$$\frac{2 + 3j}{3 - 4j} = \frac{(2 + 3j)(3 + 4j)}{(3 - 4j)(3 + 4j)} = \frac{6 + 8j + 9j - 12}{9 + 16} = \frac{-6 + 17j}{25} = -\frac{6}{25} + \frac{17}{25}j$$

1.3.2



$$|z| = \sqrt{a^2 + b^2} = z \cdot \bar{z}$$

$$|z| \cdot (\cos \alpha + j \cdot \sin \alpha)$$