

Exercise 5

By writing the individual factors on the left in exponential form, performing the needed operations, and finally changing back to rectangular coordinates, show that

$$\begin{aligned} (a) \quad & i(1 - \sqrt{3}i)(\sqrt{3} + i) = 2(1 + \sqrt{3}i); & (b) \quad & 5i/(2 + i) = 1 + 2i; \\ (c) \quad & (-1 + i)^7 = -8(1 + i); & (d) \quad & (1 + \sqrt{3}i)^{-10} = 2^{-11}(-1 + \sqrt{3}i). \end{aligned}$$