Exercise 9

Use $-1 = (-1, 0)$ and $z = (x, y)$ to show that $(-1)z = -z$.

Solution

Use the definition of multiplication of complex numbers in equation (4) on page 2.

$$\begin{aligned}(-1)z &= (-1, 0)(x, y) \\ &= (-x - 0, 0 - y) \\ &= (-x, -y) \\ &= -x - iy \\ &= -(x + iy) \\ &= -(x, y) \\ &= -z\end{aligned}$$