

Exercise 42

For the following exercises, perform the indicated operation and express the result as a simplified complex number.

$$i^{15}$$

Solution

Use the fact that $i = \sqrt{-1}$, which means $i^2 = -1$ and $i^3 = -i$ and $i^4 = 1$.

$$i^{15}$$

$$i^{12} \cdot i^2 \cdot i$$

$$(i^4)^3 \cdot (-1) \cdot i$$

$$1^3 \cdot (-1) \cdot i$$

$$1 \cdot (-i)$$

$$-i$$