

Exercise 43

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

$$i^{22}$$

Solution

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

$$i^{22}$$

$$i^{20} \cdot i^2$$

$$(i^4)^5 \cdot (-1)$$

$$1^5 \cdot (-1)$$

$$1 \cdot (-1)$$

$$-1$$