## Exercise 49

For the following exercises, evaluate the expressions, writing the result as a simplified complex number.

$$\frac{1}{i}+\frac{4}{i^3}$$

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**Solution**

Simplify the given expression.

$$\begin{aligned}\frac{1}{i}+\frac{4}{i^3} &= \frac{1}{i}+\frac{4}{i^2\cdot i}\\ &= \frac{1}{i}+\frac{4}{(-1)\cdot i}\\ &= \frac{1}{i}-\frac{4}{i}\\ &= \frac{1-4}{i}\\ &= \frac{-3}{i}\\ &= -\frac{3}{i}\times\frac{i}{i}\\ &= -\frac{3i}{i^2}\\ &= -\frac{3i}{(-1)}\\ &= 3i\end{aligned}$$