

**Exercise 39**

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

$$\frac{2 + \sqrt{-12}}{2}$$

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**Solution**

Use the fact that  $i = \sqrt{-1}$ .

$$\begin{aligned} & \frac{2 + \sqrt{-12}}{2} \\ & \frac{2 + \sqrt{4(-1)(3)}}{2} \\ & \frac{2 + \sqrt{4}\sqrt{-1}\sqrt{3}}{2} \\ & \frac{2 + 2i\sqrt{3}}{2} \\ & \frac{1}{2}(2 + 2i\sqrt{3}) \\ & 1 + i\sqrt{3} \end{aligned}$$