

Exercise 5

Explain how we rationalize a denominator, then complete the following steps to rationalize $\frac{1}{\sqrt{3}}$:

$$\frac{1}{\sqrt{3}} = \frac{1}{\sqrt{3}} \cdot \frac{\blacksquare}{\blacksquare} = \frac{\blacksquare}{\blacksquare}$$

Solution

In order to rationalize a denominator, multiply the fraction by 1. Let the numerator and denominator be the radical and simplify the result.

$$\begin{aligned} & \frac{1}{\sqrt{3}} \\ & \frac{1}{\sqrt{3}} \cdot 1 \\ & \frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} \\ & \frac{1 \cdot \sqrt{3}}{\sqrt{3} \cdot \sqrt{3}} \\ & \frac{\sqrt{3}}{(\sqrt{3})^2} \\ & \frac{\sqrt{3}}{3} \end{aligned}$$

By doing so, there's no longer a radical in the denominator. It has been rationalized.