

7.6

Rationalizing the Denominator of a Radical Expression

• Example 1

Simplify and rationalize the denominator.

$$\frac{\sqrt{15}}{\sqrt{35}}$$

We begin by rewriting, using properties of radicals and simplifying.

$$\begin{aligned} \frac{\sqrt{15}}{\sqrt{35}} &= \sqrt{\frac{15}{35}} \\ &= \sqrt{\frac{3}{7}} = \frac{\sqrt{3}}{\sqrt{7}} \end{aligned}$$

To rationalize the denominator, we multiply both numerator and denominator by $\sqrt{7}$ and simplify the result.

$$\begin{aligned} \frac{\sqrt{3}}{\sqrt{7}} \frac{\sqrt{7}}{\sqrt{7}} &= \frac{\sqrt{3}\sqrt{7}}{7} \\ &= \frac{\sqrt{21}}{7} \end{aligned}$$

• • • CHECK YOURSELF 1

Simplify and rationalize the denominator.

$$\frac{\sqrt{12}}{\sqrt{33}}$$

• • • CHECK YOURSELF ANSWER

1. $\frac{2\sqrt{11}}{11}$.

7.6 Exercises

Name _____

Section _____

Date _____

A N S W E R S

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

11. _____

12. _____

Simplify and rationalize the denominator of each of the following.

1. $\frac{\sqrt{20}}{\sqrt{30}}$

2. $\frac{\sqrt{6}}{\sqrt{18}}$

3. $\frac{\sqrt{14}}{\sqrt{28}}$

4. $\frac{\sqrt{13}}{\sqrt{39}}$

5. $\frac{\sqrt{8}}{\sqrt{160}}$

6. $\frac{\sqrt{40}}{\sqrt{52}}$

7. $\frac{\sqrt{10}}{\sqrt{55}}$

8. $\frac{\sqrt{2}}{\sqrt{6}}$

9. $\frac{\sqrt{56}}{\sqrt{88}}$

10. $\frac{\sqrt{144}}{\sqrt{171}}$

11. $\frac{\sqrt{72}}{\sqrt{117}}$

12. $\frac{\sqrt{35}}{\sqrt{77}}$