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.

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

$$= \sqrt{\frac{3}{7}} = \frac{\sqrt{3}}{\sqrt{7}}$$

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

$$\frac{\sqrt{3}}{\sqrt{7}}\frac{\sqrt{7}}{\sqrt{7}} = \frac{\sqrt{3}\sqrt{7}}{7}$$

$$= \frac{\sqrt{21}}{7}$$

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

ANSWERS

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Simplify and rationalize the denominator of each of the following.

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

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

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

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

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

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

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

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

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

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

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

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