

Remediation Objective 5

Simplify Radical Expressions by Rationalizing the Denominator:

1. If there is more than one radical sign, put the numerator and denominator under one radical sign and reduce the fraction, if possible. If there is one radical sign, reduce the fraction, if possible.
2. Split the radical into two separate radicals.
3. Look at the denominator. What does the denominator need to be multiplied by to create a perfect square in the denominator?
4. Multiply the numerator and denominator by this term as a radical.
5. Simplify the numerator and the denominator by pulling out the perfect square factor.
6. Double check to see if the fraction remaining can be reduced. Remember the values under the radical sign can be reduced together and the values in front of the radical sign can be reduced together.

Ex. $\sqrt{\frac{75}{3}} = \sqrt{25} = 5$

Ex. $\frac{\sqrt{16}}{\sqrt{4}} = \sqrt{\frac{16}{4}} = \sqrt{4} = 2$

Ex. $\frac{4}{\sqrt{3}} = \frac{4}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{4\sqrt{3}}{\sqrt{9}} = \frac{4\sqrt{3}}{3}$

Ex. $\sqrt{\frac{3}{5}} = \frac{\sqrt{3}}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{\sqrt{15}}{\sqrt{25}} = \frac{\sqrt{15}}{5}$

Note that the last two examples CANNOT be reduced because one factor is under the radical sign and one factor is not under the radical sign.

Practice:

1. $\frac{\sqrt{24}}{\sqrt{6}} =$ _____

2. $\sqrt{\frac{15}{3}} =$ _____

3. $\frac{\sqrt{13}}{\sqrt{2}} =$ _____

4. $\frac{\sqrt{7}}{\sqrt{3}} =$ _____

5. $\sqrt{\frac{1}{5}} =$ _____

6. $\frac{4}{\sqrt{7}} =$ _____

7. $\sqrt{\frac{128}{2}} =$ _____

8. $\frac{\sqrt{18}}{\sqrt{10}} =$ _____

9. $\frac{5}{\sqrt{10}} =$ _____

10. $\frac{\sqrt{28}}{\sqrt{6}} =$ _____

11. $\sqrt{\frac{9}{10}} =$ _____

12. $\frac{7}{\sqrt{3}} =$ _____