

SKILL

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Skills Readiness**Simplify Radical Expressions**

Definition: A radical expression is in *simplest form* when all of the following conditions are met.

1. The number, or expression, under the radical sign contains no perfect square factors (other than 1).
2. The expression under the radical sign does not contain a fraction.
3. If the expression is a fraction, the denominator does not contain a radical expression.

How to Simplify Radical Expressions

Look for perfect square factors and simplify these first. If the radical expression is preceded by a negative sign, then the answer is negative.	If the expression is a product, simplify then multiply, or multiply then simplify, whichever is most convenient.	If the expression is (or contains) a fraction, simplify then divide, or divide then simplify, whichever is most convenient.
<p>Example 1: Simplify $\sqrt{81}$. Since 81 is a perfect square factor, simplify the expression to 9.</p> $\sqrt{81} = \sqrt{9 \cdot 9} = 9$ $-\sqrt{81} = -\sqrt{9 \cdot 9} = -9$	<p>Example 2: Simplify $\sqrt{25}\sqrt{16}$. Since both numbers are perfect squares, simplify then multiply: $\sqrt{5 \cdot 5}\sqrt{4 \cdot 4} = 5 \cdot 4 = 20$</p>	<p>Example 3: Simplify $-\sqrt{\frac{4}{49}}$.</p> $-\sqrt{\frac{4}{49}} = -\frac{\sqrt{2 \cdot 2}}{\sqrt{7 \cdot 7}} = -\frac{2}{7}$

Practice on Your Own

Simplify each expression.

1. $\sqrt{25}$

2. $\sqrt{9}\sqrt{36}$

3. $\sqrt{\frac{81}{121}}$

4. $-\sqrt{81}$

5. $\sqrt{100}\sqrt{4}$

6. $\sqrt{2(32)}$

7. $\sqrt{169}$

8. $-\sqrt{\frac{1}{625}}$

Check

Simplify each expression.

9. $\sqrt{16}$

10. $\sqrt{81}\sqrt{64}$

11. $-\sqrt{49}$

12. $\sqrt{\frac{4}{25}}$

13. $\sqrt{2}\sqrt{50}$

14. $-\sqrt{144}$

15. $-\sqrt{9}\sqrt{4}$

16. $\sqrt{\frac{9}{36}}$
