

Lesson 2 Adding & Subtracting Radicals

The strategies for adding/subtracting polynomials can be used to add/subtract radicals. *Like terms* or *like radicals* in a sum or difference of radicals have the same radicand and the same index.

$$\begin{array}{l} \sqrt{2} + 2\sqrt{7} + 3\sqrt{2} \\ 4\sqrt{2} + 2\sqrt{7} \end{array}$$

*If the radicands are the same, we add the coefficients.

Examples

1. $6\sqrt{2} - 4\sqrt{2} + \sqrt{2} - 3\sqrt{2}$

2. $4\sqrt{10} - 2\sqrt{5} + 3\sqrt{10} + 5\sqrt{5}$

3. $\sqrt{18} - \sqrt{2}$

$$4. \sqrt{63} + \sqrt{40} - \sqrt{90} - \sqrt{28}$$

Identify the values of the variables for which each radical is defined, then simplify.

$$5. 6\sqrt{x} + 5\sqrt{x} - \sqrt{x}$$

$$6. \sqrt[3]{27p^3q} + 8\sqrt[3]{p^3q}$$