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.

$$\sqrt{2} + 2\sqrt{7} + 3\sqrt{2} = 4\sqrt{2} + 2\sqrt{7}$$

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

Examples

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

$$0\sqrt{2}$$

$$0$$

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

$$7\sqrt{10} + 3\sqrt{5}$$

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

$$\sqrt{9 \cdot 2} - \sqrt{2}$$

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

$$2\sqrt{2}$$

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4
9
16
25
36

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

$3\sqrt{7} + 2\sqrt{10} - 3\sqrt{10} - 2\sqrt{7}$

$\sqrt{7} - \sqrt{10}$

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

5. $6\sqrt{x} + 5\sqrt{x} - \sqrt{x}$ $x \geq 0$

$10\sqrt{x}$

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

$3p\sqrt[3]{q} + 8p\sqrt[3]{q}$

$11p\sqrt[3]{q}$

Assignment: Pg. 115; #4a,d, 5a,c, 7a,c, 8a,d, MC