

6-5 Homework Part 1**Operations with Radical Expressions****Example 1: Simplify $2\sqrt{50} + 4\sqrt{500} - 6\sqrt{125}$.**

$$\begin{aligned}
 2\sqrt{50} + 4\sqrt{500} - 6\sqrt{125} &= 2\sqrt{5^2 \cdot 2} + 4\sqrt{10^2 \cdot 5} - 6\sqrt{5^2 \cdot 5} \\
 &= 2 \cdot 5 \cdot \sqrt{2} + 4 \cdot 10 \cdot \sqrt{5} - 6 \cdot 5 \cdot \sqrt{5} \\
 &= 10\sqrt{2} + 40\sqrt{5} - 30\sqrt{5} \\
 &= 10\sqrt{2} + 10\sqrt{5}
 \end{aligned}$$

Factor using squares.

Simplify square roots.

Multiply.

Combine like radicals.

Example 2: Simplify $\sqrt[3]{-6a^5b^7}$.

$$\begin{aligned}
 \sqrt[3]{-16a^5b^7} &= \sqrt[3]{(-2)^3 \cdot 2 \cdot a^3 \cdot a^2 \cdot (b^2)^3 \cdot b} \\
 &= -2ab^2 \sqrt[3]{2a^2b}
 \end{aligned}$$

Exercises**Simplify.**

1. $3\sqrt{2} + \sqrt{50} - 4\sqrt{8}$

2. $\sqrt{20} + \sqrt{125} - \sqrt{45}$

3. $\sqrt{300} - \sqrt{27} - \sqrt{75}$

4. $5\sqrt{54}$

5. $\sqrt[4]{32a^9b^{20}}$

6. $\sqrt{75x^4y^7}$