

$$\begin{aligned} \textcircled{1} \quad & \sqrt{6x^2y} \cdot 2\sqrt{3x^5y^4} \\ & 2\sqrt{18x^7y^5} \\ & 2\sqrt{9 \cdot 2x^6x \cdot y^4y} \\ & \boxed{6xy\sqrt{2xy}} \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad & \frac{\sqrt[3]{3x}}{\sqrt[3]{2x^2y^5}} \cdot \frac{\sqrt[3]{4xy}}{\sqrt[3]{2^2x^4}} \\ & \frac{\sqrt[3]{12x^2y}}{\sqrt[3]{8x^3y^6}} = \frac{\sqrt[3]{12x^2y}}{2xy^2} \end{aligned}$$

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## 7.3 Binomial Radical Expressions

Adding and Subtracting Radical Expressions

$$\begin{aligned} \text{Ex 1} \quad & 5\sqrt{x} - 3\sqrt{x} \\ & 2\sqrt{x} \end{aligned}$$

$$\begin{aligned} \text{Ex 2} \quad & 4\sqrt{2} + 5\sqrt{3} \\ & 4\sqrt{2} + 5\sqrt{3} \end{aligned}$$

$$\begin{aligned} \text{Ex 1a} \quad & 2\sqrt{7} + 3\sqrt{7} \\ & 5\sqrt{7} \end{aligned}$$

$$\begin{aligned} \text{Ex 2a} \quad & 7\sqrt{5} - 2\sqrt{5} \\ & 7\sqrt{5} - 2\sqrt{5} \end{aligned}$$

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$$\text{Ex 3 } 6\sqrt{18} + 4\sqrt{8} - 3\sqrt{72}$$

$$6\sqrt{9 \cdot 2} + 4\sqrt{4 \cdot 2} - 3\sqrt{36 \cdot 2}$$

$$18\sqrt{2} + 8\sqrt{2} - 18\sqrt{2}$$

$$\textcircled{8\sqrt{2}}$$

$$\text{Ex 4 } \sqrt{50} + 3\sqrt{32} - 5\sqrt{18}$$

$$5\sqrt{2} + 12\sqrt{2} - 15\sqrt{2}$$

$$2\sqrt{2}$$

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$$\text{Ex 3/4a}$$

$$3\sqrt{20} - \sqrt{45} + 4\sqrt{80}$$

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Multiplying Binomial Expression

$$\begin{aligned} \text{Ex 5} \quad & (3 + 2\sqrt{5})(2 + 4\sqrt{5}) && 8\sqrt{25} \\ & 6 + 12\sqrt{5} + 4\sqrt{5} + 8(\underline{5}) \\ & 46 + 16\sqrt{5} \end{aligned}$$

$$\begin{aligned} \text{Ex 6} \quad & (\sqrt{2} - \sqrt{3})^2 \\ & (\sqrt{2} - \sqrt{3})(\sqrt{2} - \sqrt{3}) \\ & 2 - \sqrt{6} - \sqrt{6} + 3 \\ & \boxed{5 - 2\sqrt{6}} \end{aligned}$$

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$$\begin{aligned} \text{Ex 5a} \quad & (2 + 4\sqrt{3})(1 - 5\sqrt{3}) && -20\sqrt{9} \\ & 2 - 10\sqrt{3} + 4\sqrt{3} - 20(\underline{3}) \\ & -58 - 6\sqrt{3} \end{aligned}$$

$$\begin{aligned} \text{Ex 6a} \quad & (\sqrt{5} + \sqrt{2})^2 \\ & (\sqrt{5} + \sqrt{2})(\sqrt{5} + \sqrt{2}) \\ & 5 + \sqrt{10} + \sqrt{10} + 2 \\ & 7 + 2\sqrt{10} \end{aligned}$$

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$$\text{Ex 7 } (2 + \sqrt{3})(2 - \sqrt{3})$$

$$4 - 2\sqrt{3} + 2\sqrt{3} - 3$$

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$$\text{Ex 7a } (\sqrt{5} + \sqrt{2})(\sqrt{5} - \sqrt{2})$$

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Rationalizing Binomial Radical Denominator

$$\text{Ex 8 } \frac{(3 + \sqrt{5})}{(1 - \sqrt{5})} \cdot \frac{(1 + \sqrt{5})}{(1 + \sqrt{5})}$$

$$\frac{3 + 3\sqrt{5} + \sqrt{5} + 5}{1 + \sqrt{5} - \sqrt{5} - 5}$$

$$\frac{8 + 4\sqrt{5}}{-4} = \boxed{-2 - \sqrt{5}}$$

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Ex 8a

$$\frac{6+\sqrt{15}}{4-\sqrt{15}} \cdot \frac{4+\sqrt{15}}{4+\sqrt{15}}$$

$$\frac{24 + 6\sqrt{15} + 4\sqrt{15} + 15}{16 - 15}$$
$$\frac{39 + 10\sqrt{15}}{1}$$

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7.3 Wks: 1-33odd

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