College Prep Math
Operations With Radicals Notes

Adding/Subtracting Radical Expressions
What are like radicals?

Example 1: Perform the indicated operations.
A. $2\sqrt{48} - 3\sqrt{27}$

B. $\sqrt[3]{16x} + \sqrt[3]{54x^4}$

C. $-2\sqrt{9y} + 10\sqrt{y}$

D. $4\sqrt{27} - \sqrt{75}$

Properties of Radicals:

Multiplying Radical Expressions
To multiply radical expressions having the **same index**…

Example 2: Multiply.
A. $(2\sqrt[3]{4})(3\sqrt[3]{16})$

B. $(3\sqrt[4]{x^2y})(\sqrt[4]{x^3y^2})$

C. $(\sqrt{6} + \sqrt{3})(\sqrt{6} - 2\sqrt{3})$

To multiply radical expressions having **different indices**…

Example 3: Multiply.

A. $\sqrt[3]{5} \cdot \sqrt{5}$

B. $\sqrt[4]{abc^5} \cdot \sqrt[3]{a^3b^3c}$

Dividing Radical Expressions

To divide radical expressions having the **same index**…

Example 4: Divide. Rationalize the denominator when needed.

A. $\frac{3}{\sqrt{9}}$

B. $\frac{3}{\sqrt{7}}$

C. $\frac{\sqrt{2}}{\sqrt{3}}$

D. $\frac{\sqrt[3]{5}}{\sqrt[3]{3}}$

E. $\frac{\sqrt[4]{2}}{\sqrt[4]{4}}$

F. $\frac{6}{\sqrt{2}+\sqrt{3}}$

G. $\frac{2}{\sqrt{5}-\sqrt{7}}$

H. $\frac{1+\sqrt{2}}{1-\sqrt{2}}$

To divide radical expressions having **different indices**…

Example 5: Divide.

A. $\frac{\sqrt{2}}{\sqrt[4]{2}}$

B. $\frac{\sqrt[5]{3a^7b^6c^5}}{\sqrt[4]{2a^2bc}}$