

$$(2\sqrt{3} + 3\sqrt{5})(4\sqrt{3} - 5\sqrt{5})$$

FOIL

$$(2\sqrt{3})(4\sqrt{3}) + (2\sqrt{3})(-5\sqrt{5}) + (3\sqrt{5})(4\sqrt{3}) + (3\sqrt{5})(-5\sqrt{5})$$

$$8(3) - 10\sqrt{15} + 12\sqrt{15} - 15(5)$$

$$24 - 2\sqrt{15} - 75$$

$$-51 + 2\sqrt{15}$$

$$\boxed{-51 + 2\sqrt{15}}$$

Section 7.4

Division (Rationalizing)

$$\frac{3}{\sqrt{2}} = 1.41421356237$$

$$1.41421356237 \overline{) 3}$$

$$\frac{3}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{3\sqrt{2}}{2} \checkmark$$

$$3(1.41421356237)$$

$$\approx 4.24264068711$$

$$\begin{array}{r} 2.11 \\ 2 \overline{) 4.23} \\ \underline{4} \\ 2 \\ \underline{2} \\ 3 \end{array}$$

Fix the Denominator!

$$\frac{3}{\sqrt[3]{16x^2y^4}} = \frac{\sqrt[3]{2 \cdot 2 \cdot xy^2}}{\sqrt[3]{\cancel{2 \cdot 2} \cdot 2 \cdot 2 \cdot x \cdot y^2}}$$

$$\begin{array}{r} 2 \overline{)16} \\ 2 \overline{)8} \\ 2 \overline{)4} \\ \underline{4} \\ \cancel{4} \end{array} = \frac{\sqrt[3]{4xy^2}}{\sqrt[3]{(2 \cdot 2 \cdot 2) \cdot (2 \cdot 2 \cdot 2) \cdot (x \cdot x \cdot x) \cdot (y \cdot y \cdot y) \cdot (y \cdot y \cdot y)}}$$

$$= \frac{3 \sqrt[3]{4xy^2}}{4xy^2}$$

*

$$\frac{2x}{\sqrt[4]{20x^2y^5z^3}} = \frac{\sqrt[4]{500x^2y^3z}}{\sqrt[4]{500x^2y^3z}}$$

$$\begin{array}{r} 2 \overline{)20} \\ 2 \overline{)10} \\ \underline{5} \end{array} = \frac{\cancel{2}x \sqrt[4]{500x^2y^3z}}{\cancel{2} \cdot 5xy^2z}$$

have | need

$$\left. \begin{array}{l} 2 \cdot 2 \quad 2 \cdot 2 \\ 5 \quad 5 \cdot 5 \cdot 5 \\ x \cdot x \quad x \cdot x \\ \textcircled{y \cdot y \cdot y \cdot y} \quad y \cdot y \cdot y \\ z \cdot z \cdot z \quad z \end{array} \right\} 500$$

$$= \frac{\sqrt[4]{500x^2y^3z}}{5y^2z}$$