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

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)

$\frac{3}{\sqrt{2}} = \frac{3}{1.41.....}$

$1.41.....\overline{)3}$

$\frac{3}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \boxed{\frac{3\sqrt{2}}{2}}$ ✓

Fix the Denominator!

$3(1.41.....)$

$= 4.23.....$

2.11

$2\overline{)4.23.....}$

4

2

2

3

2.0

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

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

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

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

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

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

have	need
2 · 2	2 2] 500
5	5 · 5 · 5] 500
x x	x x
y y y y y	y y y
z z z	z