To rationalize a denomintor means to remove any irrational number from the denominator.

Rationalize each denominator

1. $\frac{9}{\sqrt{7}} \cdot \frac{\sqrt{7}}{\sqrt{7}}$

$= \frac{9\sqrt{7}}{7}$

2. $\frac{24}{\sqrt{18c}} \cdot \frac{\sqrt{2c}}{\sqrt{2c}}$

$= \frac{24\sqrt{2c}}{\sqrt{36c^2}} = \frac{24\sqrt{2c}}{6c}$

$= \frac{4\sqrt{2c}}{c}$

3. $\frac{15m^2}{\sqrt{6m^5n^9}} \cdot \frac{\sqrt{6mn}}{\sqrt{6mn}}$

$= \frac{15m^2\sqrt{6mn}}{\sqrt{36m^6n^{10}}}$

$= \frac{15m^2\sqrt{6mn}}{6m^3n^5}$

$= \frac{5\sqrt{6mn}}{2mn^5}$

4. $\frac{\sqrt{10w^5x^4}}{\sqrt{14wx^7}}$ simplify first

$\sqrt{\frac{10w^5x^4}{14wx^7}} = \sqrt{\frac{5w^4}{7x^3}}$

$= \frac{\sqrt{5w^4}}{\sqrt{7x^3}} \cdot \frac{\sqrt{7x}}{\sqrt{7x}} = \frac{\sqrt{35w^4x}}{\sqrt{49x^4}}$

$= \frac{w^2\sqrt{35x}}{7x^2}$

5. $\sqrt[3]{\frac{6}{5gh^2}} = \frac{\sqrt[3]{6}}{\sqrt[3]{5gh^2}} \cdot \frac{\sqrt[3]{5^2g^2h}}{\sqrt[3]{5^2g^2h}}$

$= \frac{\sqrt[3]{150g^2h}}{\sqrt[3]{125g^3h^3}} = \frac{\sqrt[3]{150g^2h}}{5gh}$

6. $\frac{12}{\sqrt[3]{16r^{10}s^{20}}} \cdot \frac{12}{\sqrt[3]{4r^2s}} = \frac{12}{\sqrt[3]{64r^{12}s^{21}}}$

$= \frac{12}{4r^3s^7}$

$= \frac{3}{r^3s^7}$

7. $\frac{a^9b^5}{\sqrt[6]{a^7b^{22}}} \cdot \frac{\sqrt[6]{a^5b^2}}{\sqrt[6]{a^5b^2}}$

$= \frac{a^9b^5\sqrt[6]{a^5b^2}}{\sqrt[6]{a^{12}b^{24}}} = \frac{a^9b^5\sqrt[6]{a^5b^2}}{a^2b^4} = a^7b\sqrt[6]{a^5b^2}$

8. $\dfrac{e^9 g^{14}}{\sqrt[5]{e^{33} g^{46}}} \cdot \dfrac{\sqrt[5]{e^2 g^4}}{\sqrt[5]{e^2 g^4}} = \dfrac{e^9 g^{14} \sqrt[5]{e^2 g^4}}{\sqrt[5]{e^{35} g^{50}}}$

$= \dfrac{e^9 g^{14} \sqrt[5]{e^2 g^4}}{e^7 g^{10}} = e^2 g^4 \sqrt[5]{e^2 g^4}$

Hwk #4

Sec 7-2

Pages 377 -378

Problems 28, 30, 33, 46, 49, 53

Sec 7-3: Binomial Radical Expressions.

Adding and Subtracting Radical Expressions:

$4\sqrt{7} + 5\sqrt{3} - \sqrt{7} + 2\sqrt{3}$

$3\sqrt{7} + 7\sqrt{3}$

Multiplying Radical Expressions:

$\sqrt{3}(\sqrt{11} + 7\sqrt{2})$

$\sqrt{3 \cdot 11} + 7\sqrt{3 \cdot 2} = \sqrt{33} + 7\sqrt{6}$

Simplify each.

1. $3\sqrt{5}(8 - \sqrt{5})$

$= 24\sqrt{5} - 3\sqrt{5 \cdot 5}$

$= 24\sqrt{5} - 3 \cdot 5$

$= 24\sqrt{5} - 15$

2. $2\sqrt{6}(\sqrt{3} + 10\sqrt{6})$

$= 2\sqrt{18} + 20\sqrt{6 \cdot 6}$

$9 \cdot 2$

$= 2 \cdot 3\sqrt{2} + 20 \cdot 6$

$6\sqrt{2} + 120$

Simplify.

$5\sqrt{18} + 6\sqrt{12} - \sqrt{8} - 2\sqrt{27}$

$9 \cdot 2 \quad 4 \cdot 3 \quad 4 \cdot 2 \quad 9 \cdot 3$

$= 5 \cdot 3 \cdot \sqrt{2} + 6 \cdot 2 \cdot \sqrt{3} - 2\sqrt{2} - 2 \cdot 3\sqrt{3}$

$= 15\sqrt{2} + 12\sqrt{3} - 2\sqrt{2} - 6\sqrt{3}$

$13\sqrt{2} + 6\sqrt{3}$