Sec 7-2. Multiplying and Dividing Radical Expressions

Property — **Multiplying Radical Expressions**

If $\sqrt[n]{a}$ and $\sqrt[n]{b}$ are real numbers, then $\sqrt[n]{a} \cdot \sqrt[n]{b} = \sqrt[n]{ab}$.

Simplify.

Assume all variables are positive.

$\sqrt{24a^5b^6} \cdot \sqrt{2a^3b^5}$

Multiply then simplify

$= \sqrt{48a^8b^{11}}$

$16 \cdot 3$

$4a^4b^5\sqrt{3b}$

Simplify then multiply

$2a^2b^3\sqrt{6a} \cdot ab^2\sqrt{2ab}$

$2a^3b^5\sqrt{12a^2b}$

$4a^4b^5\sqrt{3b}$

Simplify.

Assume all variables are positive.

$\sqrt{80a^5b^6} \cdot \sqrt{54a^3b^5}$

$\sqrt{80} \cdot \sqrt{54}\sqrt{a^8b^{11}}$

$12a^4b^5\sqrt{30b}$

Which of these can be simplified?

A. $\sqrt{5} \cdot \sqrt{6} = \sqrt{30}$

B. ~~$\sqrt{10} \cdot \sqrt[3]{7}$~~

$\frac{1}{3} + \frac{1}{2} = \frac{2}{6} + \frac{3}{6}$

C. $\sqrt[3]{m} \cdot \sqrt{m} = m^{\frac{1}{3}} \cdot m^{\frac{1}{2}} = m^{5/6}$

Simplify. Assume that all variables are positive.

1. $\dfrac{\sqrt{24x^5y^{13}}}{\sqrt{3xy^4}}$

Two ways to complete this problem

Divide then simplify

$\sqrt{8x^4y^9}$

$4 \cdot 2$

$2x^2y^4\sqrt{2y}$

Simplify then divide

$\dfrac{2x^2y^6\sqrt{6xy}}{y^2\sqrt{3x}} = 2x^2y^4\sqrt{2y}$

Property **Dividing Radical Expressions**

If $\sqrt[n]{a}$ and $\sqrt[n]{b}$ are real numbers and $b \neq 0$, then $\dfrac{\sqrt[n]{a}}{\sqrt[n]{b}} = \sqrt[n]{\dfrac{a}{b}}$.

Simplify each. Assume that all variables are positive.

1. $\dfrac{\sqrt{48x^9y^8}}{\sqrt{2x^6y^3}}$

$\sqrt{24x^3y^5}$

$2xy^2\sqrt{6xy}$

2. $\dfrac{\sqrt[3]{15ab^{10}}}{\sqrt[3]{5a^7b^2}}$

$\sqrt[3]{\dfrac{3b^8}{a^6}}$

$\dfrac{b^2\sqrt[3]{3b^2}}{a^2}$

Hwk #3

Sec 7-2

Page 377

Problems 17 - 19 and 24 - 26