

Dividing Radical Expressions (7.4)**Math 098**

Method: (The quotient rule for radicals) For any real numbers $\sqrt[n]{a}$ and $\sqrt[n]{b}, b \neq 0$, we have $\sqrt[n]{\frac{a}{b}} = \frac{\sqrt[n]{a}}{\sqrt[n]{b}}$

Example 1: Simplify

a.) $\sqrt{\frac{144}{81}}$

b.) $\sqrt[3]{\frac{125}{216}}$

c.) $\sqrt{\frac{25x^5}{y^6}}$

d.) $\sqrt[3]{\frac{8a^8}{27b^{14}}}$

e.) $\frac{\sqrt{50}}{\sqrt{2}}$

f.) $\frac{\sqrt[3]{81}}{\sqrt[3]{3}}$

g.) $\frac{\sqrt{72xy}}{2\sqrt{2}}$

h.) $\frac{\sqrt[5]{64a^{11}b^{28}}}{\sqrt[5]{2ab^{-2}}}$

Concept: Rationalizing the Denominator

How might we add $\sqrt{\frac{1}{3}}$ and $\frac{1}{3}$?

Example 2: Rationalize the denominator

a.) $\sqrt{\frac{5}{11}}$

b.) $\frac{3}{\sqrt{7}}$

c.) $\frac{2}{\sqrt{5}-3}$

d.) $\frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$