

4.5b Quotients & Radicals

$$\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$$

Simplify

① $\sqrt{\frac{9}{64}}$

② $\sqrt{\frac{2}{25}}$

③ $\sqrt{\frac{36}{49}}$

$$\frac{\sqrt{9}}{\sqrt{64}} = \frac{3}{8}$$

$$\frac{\sqrt{2}}{\sqrt{25}} = \frac{\sqrt{2}}{5}$$

$$\frac{\sqrt{36}}{\sqrt{49}} = \frac{6}{7}$$

What about $\sqrt{\frac{2}{3}}$?

$\frac{\sqrt{2}}{\sqrt{3}}$ can't reduce either, but can't have $\sqrt{}$ in denominator.
Gotta get rid of it.

$$\frac{\sqrt{2}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{6}}{\sqrt{9}} = \frac{\sqrt{6}}{3}$$

Called Rationalizing the Denominator

multiply to make it a perfect \square

is 3!

Rationalize

$$\frac{\sqrt{5}}{\sqrt{7}} \cdot \frac{\sqrt{7}}{\sqrt{7}} = \frac{\sqrt{35}}{7}$$

$$\frac{3}{7+\sqrt{2}} \cdot \frac{(7-\sqrt{2})}{(7-\sqrt{2})} = \frac{3(7-\sqrt{2})}{(7+\sqrt{2})(7-\sqrt{2})} = \frac{21-3\sqrt{2}}{49-\sqrt{4}} = \frac{21-3\sqrt{2}}{47}$$

called the conjugate

Same #'s, but opposite sign

$$\frac{15}{6-\sqrt{5}} \rightarrow \text{name the conjugate } \dots \frac{6+\sqrt{5}}{6+\sqrt{5}}$$

P 209
9-17
(on board?)

P269:

$$9) \sqrt{\frac{5}{16}}$$

$$10) \sqrt{\frac{35}{36}}$$

$$11) \frac{8}{\sqrt{3}}$$

$$12) \frac{7}{\sqrt{2}}$$

$$13) \sqrt{\frac{18}{11}}$$

$$14) \sqrt{\frac{13}{28}}$$

$$15) \frac{2}{1-\sqrt{3}}$$

$$16) \frac{1}{5-\sqrt{6}}$$

$$17) \frac{\sqrt{2}}{4+\sqrt{5}}$$

$$18) \frac{3+\sqrt{7}}{2-\sqrt{10}}$$