

Algebra 1

Section 10.2 continued

Dividing Rational Functions

Goal: to simplify quotients of rational expressions.

What do you think the simplified answer of the following is?

$$\sqrt{\frac{36}{25}} = \frac{6}{5}$$

Division Property of Square Roots

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

When the denominator of the radicand is a perfect square, it is easier to apply the Division Property first. If the denominator of the radicand is not a perfect square, it might be easier to simplify the fraction first.

Ex:

$$\sqrt{\frac{14}{100}} = \frac{\sqrt{14}}{\sqrt{100}} = \frac{\sqrt{14}}{10}$$

$$\sqrt{\frac{48}{6}} = \sqrt{8} = \sqrt{4 \cdot 2} = 2\sqrt{2}$$

Simplify:

$$\sqrt{\frac{144}{9}} = \frac{\sqrt{144}}{\sqrt{9}} = \frac{12}{3} = 4$$

$$\sqrt{\frac{18}{2}} = \sqrt{9} = 3$$

Simplify:

$$\sqrt{\frac{36a}{4a^3}} = \frac{\sqrt{36a}}{\sqrt{4a^3}} = \frac{6\sqrt{a}}{2a\sqrt{a}} = \frac{3}{a}$$

$$\sqrt{\frac{75y^3}{z^2}} = \frac{\sqrt{75y^3}}{\sqrt{z^2}} = \frac{\sqrt{25 \cdot 3y^2y}}{z} = \frac{5y\sqrt{3y}}{z}$$

Simplify:

$$\sqrt{\frac{4}{7}} = \frac{\sqrt{4}}{\sqrt{7}} = \frac{2\sqrt{7}}{\sqrt{7} \cdot \sqrt{7}} = \frac{2\sqrt{7}}{7}$$

Remember, to be simplified we cannot leave a radicand in the denominator. We will have to rationalize the denominator. To rationalize a square root, we multiply top and bottom by the radicand.

Simplify:

$$\frac{\sqrt{5}}{\sqrt{18m}} = \frac{\sqrt{5}}{\sqrt{9 \cdot 2m}} = \frac{\sqrt{5}}{3\sqrt{2m} \sqrt{2m}} = \frac{\sqrt{10m}}{3\sqrt{2m^2}}$$

$$\sqrt{\frac{7s}{3}} = \frac{\sqrt{7s} \cdot \sqrt{3}}{\sqrt{3} \cdot \sqrt{3}} = \frac{\sqrt{21s}}{\sqrt{9}} = \frac{\sqrt{21s}}{3}$$

#47.

$$\frac{8\sqrt{7s}}{\sqrt{28s^3}} = \frac{8\sqrt{7s}}{\sqrt{4 \cdot 7 \cdot 2s^3}} = \frac{8\sqrt{7s}}{2s\sqrt{7s}}$$

$$\frac{10}{10} \quad \frac{5}{5}$$

$$\frac{84}{25} = \frac{4}{5}$$

Hwk: pg 623 - 624

#36 - 48 evens, 50 - 54 all,

58 - 66 evens