

Take note

Property Combining Radical Expressions: Quotients

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

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

Remember for a radical to be simplified:

- a) there can not be a radical in the denominator of a fraction
- b) there can not be a fraction inside of a radical

To take care of the radical in the denominator, we RATIONALIZE the denominator. Get rid of the radical in the denominator.

7. $\frac{3}{\sqrt{5}} \left(\frac{\sqrt{5}}{\sqrt{5}} \right)$
 $\frac{3\sqrt{5}}{5}$

8. $\frac{2}{\sqrt{6}} \frac{\sqrt{6}}{\sqrt{6}}$
 $\frac{2\sqrt{6}}{3\sqrt{6}} = \frac{1\sqrt{6}}{3}$

9. $\frac{\sqrt{7}}{\sqrt{18x}}$
 $\frac{\sqrt{7}}{\sqrt{2 \cdot 3 \cdot 3 \cdot x}} = \frac{\sqrt{7}}{3\sqrt{2x}} \cdot \frac{\sqrt{2x}}{\sqrt{2x}} = \frac{\sqrt{14x}}{6x}$



Problem 4 Dividing Radical Expressions

Got-It? What is the simplest form of $\frac{\sqrt{50x^6}}{\sqrt{2x^4}}$?

$\sqrt{\frac{50x^6}{2x^4}}$
 $\sqrt{25x^2} = 5x$

Pre Ch 6
 $\sqrt{50x^6} = 5\sqrt{2}x^3$
 $\sqrt{2x^4} = \sqrt{2}x^2$

Divide and simplify.

8. $\frac{\sqrt{18x^5}}{\sqrt{2x^3}}$

9. $\frac{\sqrt[3]{96y^5}}{\sqrt[3]{4y}}$

10. $\frac{\sqrt[3]{54x^4y}}{\sqrt[3]{2x^6y^2}}$

11. $\frac{15\sqrt{3}}{2\sqrt{5x}}$

12. $\frac{3\sqrt[3]{5x^6y}}{12\sqrt[3]{15x^2y^5}}$

Divide and simplify.

$$37. \frac{\sqrt{500}}{\sqrt{5}}$$

$$38. \frac{\sqrt{48x^3}}{\sqrt{3xy^2}}$$

$$39. \frac{\sqrt{56x^5y^5}}{\sqrt{7xy}}$$

$$40. \frac{\sqrt[3]{250x^7y^3}}{\sqrt[3]{2x^2y}}$$

$$41. \frac{\sqrt[3]{48x^3y^2}}{\sqrt[3]{6x^4y}}$$

$$42. \frac{\sqrt{20ab}}{\sqrt{45a^2b^3}}$$



Problem 5 Rationalizing the Denominator

Got It? What is the simplest form of $\frac{\sqrt[3]{7x}}{\sqrt[3]{5y^2}}$?

$$\frac{\sqrt[3]{7 \cdot x} \sqrt[3]{5 \cdot 5 \cdot y}}{\sqrt[3]{5 \cdot y \cdot y} \sqrt[3]{5 \cdot 5 \cdot y}}$$
$$\frac{\sqrt[3]{175xy}}{5y}$$

Rationalize the denominator of each expression.

$$43. \frac{\sqrt{x}}{\sqrt{2}}$$

$$44. \frac{\sqrt{5}}{\sqrt{8x}}$$

$$45. \frac{\sqrt[3]{x}}{\sqrt[3]{2}}$$

$$49. \frac{\sqrt{3xy^2}}{\sqrt{5xy^3}}$$

$$50. \frac{\sqrt{5x^4y}}{\sqrt{2x^2y^3}}$$

$$51. \frac{\sqrt[3]{12ab^3c^2}}{\sqrt[3]{10a^3bc}}$$