Chapter 10 - Radical Expressions & Triangles

Alg 1

radical sign ↓ $\sqrt{25}$ ← radicand

10-2 Simplifying Radical Expressions

Radical Expression : Contains a radical

Radicand : Number inside radical

Simplest form : _____

Product Property of Square Roots

$$\sqrt{ab} = \sqrt{a} \cdot \sqrt{b}$$

Example: $\sqrt{4 \cdot 25} = \sqrt{4} \cdot \sqrt{25}$

Example 1 - Simplify Square Roots

a. $\sqrt{12}$ Greatest Perfect Square Factor

$\sqrt{4} \cdot \sqrt{3}$

$2\sqrt{3}$

c. $\sqrt{52}$

$\sqrt{4}\sqrt{13}$

$2\sqrt{13}$

b. $\sqrt{90}$

$\sqrt{9} \cdot \sqrt{10}$

$3\sqrt{10}$

d. $\sqrt{72}$

$\sqrt{9} \cdot \sqrt{8}$

$3\sqrt{8}$

$3\sqrt{4} \cdot \sqrt{2}$

$3 \cdot 2\sqrt{2}$

$6\sqrt{2}$

$\sqrt{36} \cdot \sqrt{2}$

$6\sqrt{2}$

$\sqrt{300}$

$\sqrt{100} \cdot \sqrt{3}$

$10\sqrt{3}$

$\sqrt{30} = \sqrt{30}$

$\sqrt{75}$

$\sqrt{25} \cdot \sqrt{3}$

$5\sqrt{3}$

$\sqrt{48}$

$\sqrt{16} \cdot \sqrt{3}$

$4\sqrt{3}$

Example 2 : Multiplying Square Roots

Find $\sqrt{3} \cdot \sqrt{15}$

Find $\sqrt{2} \cdot \sqrt{24}$

Example 3 : Simplify a Square Root with Variables

-simplify the numbers
-simplify the variables

Simplify $\sqrt{40x^4y^5z^3}$

Simplify $\sqrt{45a^4b^5c^6}$

Quotient Property of Square Roots

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

Example $\sqrt{\frac{49}{4}} = \frac{\sqrt{49}}{\sqrt{4}}$

NEVER LEAVE A RADICAL IN THE DENOMINATOR!!!!!!

Example : Rationalizing the Denominator

Simplify $\frac{\sqrt{10}}{\sqrt{3}}$

$$\frac{\sqrt{12}}{\sqrt{5}}$$

$$\frac{\sqrt{2}}{\sqrt{6}}$$

$$\frac{\sqrt{11y}}{\sqrt{27}}$$

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

Example : Use conjugates to Rationalize the Denominator

$$\frac{2}{6-\sqrt{3}}$$

$$\frac{3}{5-\sqrt{2}}$$