Section 10.3—Product Rule for Radicals

What is a PRODUCT?

Is the PRODUCT OF ROOTS the same as the ROOT OF THE PRODUCT?

Simplify

$\sqrt{36} \cdot \sqrt{4}$

$\sqrt{36 \cdot 4}$

When can I MULTIPLY RADICALS?

Examples

Simplify

$\sqrt{2} \cdot \sqrt{32}$

$\sqrt{5} \cdot \sqrt{7}$

$\sqrt[3]{xy} \cdot \sqrt[3]{7x}$

Is the QUOTIENT OF ROOTS the same as the ROOT OF THE QUOTIENT?

Simplify

$\dfrac{\sqrt{36}}{\sqrt{4}}$

$\sqrt{\dfrac{36}{4}}$

When can I DIVIDE RADICALS?

Examples

Simplify

$\dfrac{\sqrt{49}}{\sqrt{64}}$

$\dfrac{\sqrt{243}}{\sqrt{3}}$

$\dfrac{\sqrt{15}}{\sqrt{81}}$

$\dfrac{\sqrt{21}}{\sqrt{3}}$

How can I SIMPLIFY RADICALS THAT AREN'T PERFECT SQUARES?

Simplify $\sqrt{20}$.

1. Is 20 a _____ _____?

2. Does it have any _____ square factors?

3. Use the _____ _____ to simplify.

$\sqrt{20} = \sqrt{\quad} \cdot \sqrt{\quad} =$

Examples **Simplify.**

$\sqrt{48}$

$\sqrt{300}$

$\sqrt{108}$

$\sqrt[3]{250}$

$\sqrt[3]{243}$

$\sqrt{x^3}$

$\sqrt{75x^7y^3}$

$\sqrt{48a^3b^7c^4}$

$\sqrt{3} \cdot \sqrt{6}$

$5\sqrt{3x^3} \cdot 3\sqrt{15x^2}$

$\dfrac{\sqrt{288}}{\sqrt{6}}$

Summary: