

Unit 4: Radical Expressions & Equations

4.2 Working With Radicals

Radicals are roots, and are accepted as exact answers, instead of rounded decimals.

ex.

$$\sqrt{5}$$

$$3\sqrt{2}$$

$$\sqrt[3]{14x}$$

$$\sqrt[5]{16x^3y}$$

A radical may have different parts: $\sqrt[4]{50x}$

Like Radicals: Use the information in the table to describe *like radicals*.

Pairs of Like Radicals	Pairs of Unlike Radicals
$5\sqrt{7}$ and $-\sqrt{7}$	$2\sqrt{5}$ and $2\sqrt{3}$
$\frac{2}{3}\sqrt[3]{5x^2}$ and $\sqrt[3]{5x^2}$	$\sqrt[4]{5a}$ and $\sqrt[5]{5a}$

Recall: Evaluate:

a) $\sqrt{-100}$

b) $\sqrt[3]{-64}$

c) $\sqrt[5]{-32}$

d) $\sqrt[4]{-81}$

In your own words, describe when it is possible to evaluate a radical with a negative radicand.

Restrictions on Variables: Sometimes we have variables under a radical sign. When this happens, we need to state any restrictions there may be on the variable(s).

If a radical has an _____ index, then the _____ must be non-negative.

State the restrictions (if necessary) on the following:

a) $\sqrt{x-2}$

b) $\sqrt[3]{3x+5}$

c) $\sqrt{8-x}$

d) $\sqrt[4]{2x-1}$

Convert Mixed Radicals to Entire Radicals.

a) $7\sqrt{2}$

b) $a^3\sqrt{a}$

c) $5b\sqrt{b^3}$

d) $2x^2\sqrt[3]{3x}$

Express Entire Radicals as Mixed Radicals. (Simplify)

a) $\sqrt{300}$

b) $3\sqrt{75x^6}$

c) $2x\sqrt{x^7}$

d) $\sqrt{48y^5}$

e) $\sqrt[3]{16b^{11}}$

f) $\sqrt[4]{48y^5}$

Compare and Order Radicals:

a) Comparing mixed radicals with like radicands: Write in ascending order:

$3\sqrt{2}, 5\sqrt{2}, 2\sqrt{2}, 10\sqrt{2}, -\sqrt{2}$:

b) Comparing radicals that do not have like radicands: Write in descending order:

$4(13)^{\frac{1}{2}}, 8\sqrt{3}, 14, \sqrt{202}, 10\sqrt{2}$

Practice: pg. 278/ #1 – 6, 11, 12, 14, 20

& Worksheet(207) – on sheet



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