

Welcome to ...

Pre-Calculus 110

Housework to get done today...

- Attendance
- Introductions
- Classroom Rules...
 1. Must be on time and prepared with all necessary supplies.
 2. No food or drink during class other than water and a light snack before class.
 3. Must be respectful of all others in the classroom. Someone speaking or intercom in use means EVERYONE else is listening.
- Review emergency evacuation procedures and "code black".
- Pathways of High School Mathematics
- Course Outline

• Number Sense and Algebra

Vocabulary of Radicals:

Identify the parts of this radical...

- (1) Coefficient
- (2) Radicand
- (3) Index

Example: $5\sqrt[3]{6}$

Coeff. (green arrow pointing to 5)
Index (blue arrow pointing to 3)
Radicand (blue arrow pointing to 6)

~~$\sqrt{-1}$~~

- The square root of any real number is positive and is referred to as the principal square root

Any idea of what is meant by a restriction on a radical expression?

- Use the samples below to drive your thoughts...

| | | | |
|--------------------------------------|-----------------------------|--|--------------------|
| \sqrt{x} | $\sqrt{x+7}$ | $\sqrt[3]{3x-1}$ | $\sqrt[6]{5x^8}$ |
| $\{x x \geq 0, x \in \mathbb{R}\}$ | $x+7 \geq 0$ $x \geq -7$ | $x \geq \frac{1}{3}$ $x \in \mathbb{R}$ | $x \in \mathbb{R}$ |

None (red)
 $x \in \mathbb{R}$ (red)
 $\sqrt[3]{-8}$ (red)

- Like Radicals have identical radicands and indicies (plural of index)

Such that

$3\sqrt{\quad} \quad \& \quad 5\sqrt{\quad}$

Not like

~~$3\sqrt{\quad} \quad \& \quad 5\sqrt[3]{\quad}$~~

$\Rightarrow x^2\sqrt{xy} \quad \& \quad 3w\sqrt{xy}$

$$\sqrt[4]{7-2x}$$

$$7-2x \geq 0$$

$$\frac{-2x}{-2} \geq \frac{-7}{-2}$$

$$x \geq \frac{7}{2}$$

negative

$$x \leq \frac{7}{2}$$

Restriction



$$\sqrt[7]{4+x}$$

$$\{x \in \mathbb{R}\}$$

No
Restrictions

- Without the aid of a calculator arrange the following radicals in descending order:

$$\begin{array}{ccccccc}
 2\dots & 4\dots & 3 & & & & \\
 \sqrt[3]{13}, & \sqrt{18}, & \sqrt{9}, & \sqrt[4]{27}, & \sqrt[3]{-5} & & \\
 \textcircled{1} & \textcircled{2} & & & \textcircled{5} & &
 \end{array}$$

$$\begin{array}{l}
 \sqrt{x+2} \\
 x+2 \geq 0 \\
 x \geq -2
 \end{array}
 \left. \begin{array}{l}
 \sqrt{x+2} \\
 \text{No} \\
 \text{Rest.} \\
 \underline{x \in \mathbb{R}}
 \end{array} \right\}$$

- What strategies were used?

$$\begin{array}{l}
 \sqrt{9} \\
 \sqrt[4]{-9} \\
 -3 \cdot -3 \neq 9
 \end{array}$$

$$\begin{array}{l}
 \sqrt[3]{8} = 2 \\
 \sqrt[3]{-8} = -2 \\
 -2 \cdot -2 \cdot -2 = -8
 \end{array}$$

$$\begin{array}{l}
 3 \cdot 3 = 9 \\
 -3 \cdot -3 = 9
 \end{array}$$

$$\sqrt[10]{5x-7}$$

$$5x-7 \geq 0$$

$$\frac{5x}{5} \geq \frac{7}{5}$$

$$x \geq \frac{7}{5}$$

$$\frac{-3x}{-3} \geq \frac{9}{-3}$$

$$x \leq -3$$

* Divide by a Negative MUST Reverse the Inequality

$$\frac{2w}{2} = \frac{12}{2}$$

$$w = 6$$

Attachments

Mathematical Pathways Description.docx

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