

DO NOW

Review in your notes from yesterday what is on the irrational list and what is on the rational list.

Rational or Irrational????

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1.7 Simplifying Radicals

$\sqrt{12}$ is irrational

- can approximate using a calculator
 - To BE EXACT \rightarrow it must contain a radical
- *We can simplify.

Product Property For Square Roots:

For all $a \geq 0$ and $b \geq 0$,

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

* Similar to:

$$(ab)^2 = a^2 b^2$$

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Recall: Perfect squares

- 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225...

variables - has an even exponent

To take a square root

\rightarrow divide the exponent by 2.

Procedure: 1. Separate by #'s and letters.

2. For each radical, find 2 factors of the radicand...

*The 1st MUST BE a perfect square

3. Express the radical as a product of the square roots of these factors.

4. Reorganize and take any rational roots.

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Examples:

1. $\sqrt{12}$
 $\sqrt{4 \cdot 3}$
 $\sqrt{4}\sqrt{3}$
 $2\sqrt{3}$

2. $\sqrt{50}$
 $\sqrt{25}\sqrt{2}$
 $5\sqrt{2}$

3. $\sqrt{18}$
 $\sqrt{9}\sqrt{2}$
 $3\sqrt{2}$

4. $\sqrt{200}$
 $\sqrt{100}\sqrt{2}$
 $10\sqrt{2}$

OR $\sqrt{25}\sqrt{8}$ OR $\sqrt{4}\sqrt{50}$
 $5\sqrt{8}$ $2\sqrt{50}$
 $5\sqrt{4}\sqrt{2}$ $2\sqrt{25}\sqrt{2}$
 $5(2)\sqrt{2}$ $2(5)\sqrt{2}$
 $10\sqrt{2}$ $10\sqrt{2}$

5. $4\sqrt{60}$
 $4\sqrt{4}\sqrt{15}$
 $4(2)\sqrt{15}$
 $8\sqrt{15}$

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