Unit 2
Exponents and Irrational Numbers

Lesson 1: Number Systems

Natural Numbers:

Whole Numbers:

Integers:

Rational Numbers:

Irrational Numbers:

Real Numbers:

Classify each of the following numbers

-7 $\frac{4}{9}$

4.87	0
π	$-9.\overline{4}$
$\sqrt{5}$	$\frac{24}{3}$
0.112131415...	

Many irrational numbers come from finding the square root or numbers that are not perfect squares. Finding a perfect square root is the opposite to squaring a number. The following basic information about square root is essential.

The symbol we use to identify a root is called a radical sign ($\sqrt{\ }$). The number inside is called a radicand ($\sqrt{radicand}$) and the other number is the index ($\sqrt[index]{\ }$). The entire expression is called a radical.

$$\sqrt[index]{radicand}$$

$\sqrt{\ } \rightarrow square-root$
$\sqrt[3]{\ } \rightarrow cube-root$
$\sqrt[4]{\ } \rightarrow fourth-root$
$\sqrt[5]{\ } \rightarrow 5th-root$

Perfect Squares

Every positive number has 2 possible square roots

Ex $\sqrt{16} =$

$\sqrt{49} =$

$\sqrt{121} =$

But you cannot have $\sqrt{-16}$ because _____

But you can have $-\sqrt{16}$ because _____

As for cube roots you could have $-\sqrt[3]{27}$ because $(-1)\sqrt[3]{27} = (-1)(3) = -3$

And you could also have $\sqrt[3]{-27}$ because a number x itself x itself can be negative

Many irrational numbers come from finding the square root of numbers that are not perfect squares. Using your calculator, practice rounding the following to nearest 100^{th}.

**** note on your calculators, to find the 3^{rd}, 4^{th} 5^{th} ...root, use your math key

Math

$\sqrt[3]{72}$ 2.35 $\sqrt[3]{39}$ 3.39

index =2 $\sqrt{125}$ 11.18 $\sqrt[3]{600}$ 8.43 $\sqrt[4]{738}$ 5.21

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

List the following numbers in ascending order. least to greatest.

$\sqrt[3]{115}$ $\sqrt{22}$ 5.24 $\frac{139}{25}$

4.86 4.69 5.56

4.69, 4.86, 5.24, 5.56

List the following numbers in descending order. greatest to least

$\sqrt[3]{1735}$ $\sqrt{137}$ 11.94 $\frac{617}{50}$

12.02 11.70 12.34

12.34, 12.02, 11.94, 11.70

$\frac{617}{50}$, $\sqrt[3]{1735}$, 11.94, $\sqrt{137}$

Homework Pg 211 #1, 3-6, 10-15, 20