8/18/2020

P1 Real Numbers:

Natural #'s
@ Counting #'s : 1, 2, 3, ...

Whole #'s : 0, 1, 2, 3...

Integers: ... -3, -2, -1, 0, 1, 2, 3, ...

Rational #: fraction

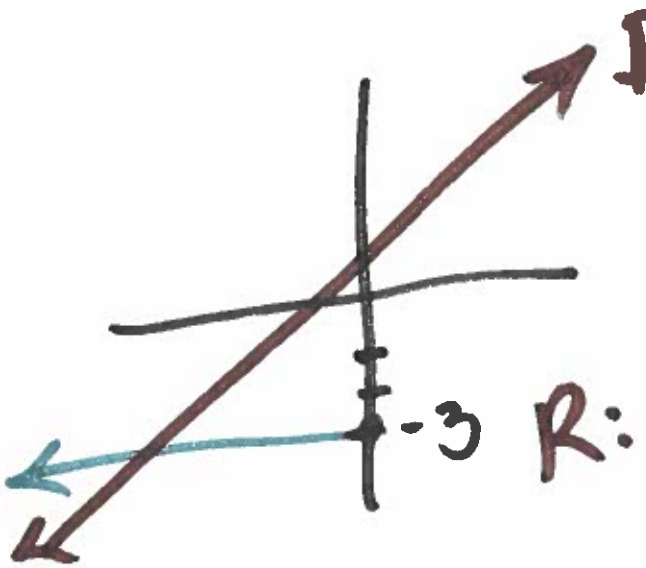
Irrational #: have no end
(ex) π

Set-builder notation:

{ } [ ]

( ) [ )

- D: $x = \mathbb{R}$ ← all reals $(-\infty, \infty)$
- R: $x \leq -3$ $(-\infty, -3]$ ← included



Terminates: ends

Infinitely repeating:

ex. $6.\overline{66}$

Inequalities:

open circle parathesis

- $<$ - less than
- $>$ - greater than

closed circle bracket

- $\leq$ - less than or equal to
- $\geq$ - greater than or equal to

Unbounded intervals:

- $+\infty$ - infinitity (positive)
- $-\infty$ - negative infinity

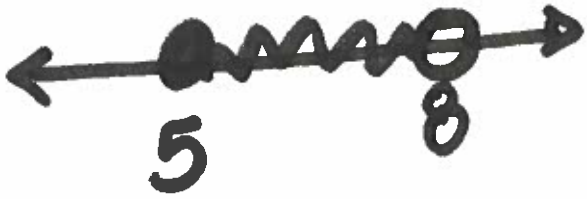
ie1

$[5, \infty)$

ie2

$(-\infty, 5)$

ie3



$[5, 8)$

Left to right

Additive Inverse: (opposite sign)

ex $5 + (-5) =$ ☺

Multiplicative Inverse: : (reciprocal)

ex $-\frac{1}{2} \cdot \left(\frac{-2}{1}\right) = 1$

Commutative prop: (reverse order)

$a + b = b + a$

Associative Property:

$(a + b) + c = a + (b + c)$

5^{3} → exponent / power / degree

Base

mult. (add powers)

ie1 $2a^3 \cdot 6a^2$ 2 base add

$12a^5$ 1 base (mult.)

ie2 $\left(\frac{x^2}{2}\right)^{-3} = \frac{x^{-6}}{2^{-3}}$

$(x^2)(x^2)(x^2) = x^{-6}$

ie3 $\left(\frac{u^2 \cdot v^3}{v^4 \cdot z^2}\right)^{-2} = \frac{u^{-4} \cdot v^{-6}}{v^{-8} \cdot z^{-4}}$

positive powers → $\frac{v^2 \cdot z^4}{u^4}$

$\frac{v^2 \cdot z^4}{u^4}$

Addition: (must have same base & power)

ie1 $2a^3 + 6a^3$

$8a^3$

ie2 $2a^2 + 5a^3$

Scientific Notation:

ex $9.300. = 9.300 \times 10^{3}$

(new pt. to old point)

New pt. ↑ old ↑

ex2 $.0053 = 5.3 \times 10^{-3}$

old pt. ↑ new pt. ↑

(New pt. to old pt.)

ie3 $$\frac{(3.7 \times 10^{5})(4.5 \times 10^{9})}{(1.8 \times 10^{4})}$$

$$= \frac{(3.7 \times 4.5)}{(1.8)} \cdot \frac{(10^{5} \times 10^{9})}{(10^{4})}$$

$$= \frac{16.65}{1.8} \cdot \frac{\cancel{10} \cdot 10}{\cancel{10^4}}$$

$$= 9.25 \cdot 10^{10}$$