

August 29, 2017

$$S = \{1, 2, 3, \dots, 43, 44, 45, \dots, 100\}$$

$$0.6\bar{2} \approx 0.6222222222222222$$

$$0.\bar{62} \approx 0.6262626262626262$$

Decimal Representations of fractions.

Q {

- ① Terminates  
 $\frac{1}{2} = 0.5$
- ② Repeating pattern  
 $\frac{1}{3} \approx 0.3\bar{3}$

Aug 29-9:55 AM

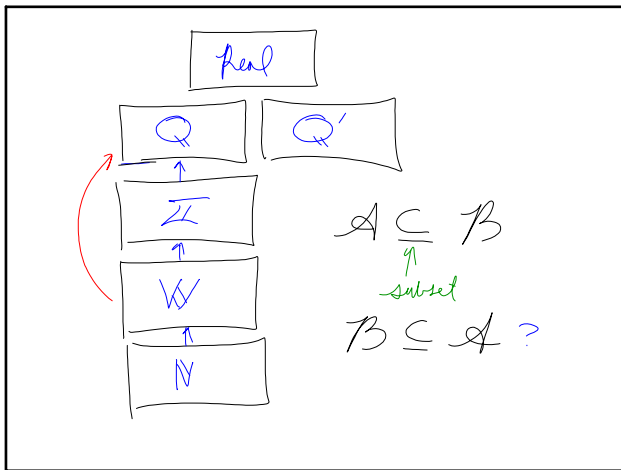
$$W = \{0, 1, 2, 3, \dots\}$$

$$\mathbb{Z} = \{\dots, -3, -2, -1, 0, 1, 2, 3, \dots\}$$

$-15 \in \mathbb{Z}$

$15 \in \mathbb{N}, W, \mathbb{Z}, \mathbb{Q}, \mathbb{R}$

Aug 29-10:13 AM



Aug 29-10:21 AM

Is  $\sqrt{5}$  Irrational?

\* Suppose that  $\sqrt{5}$  is Rational  
Hope  $\rightarrow$  get a Contradiction!

$p, q \in \mathbb{Z}$

Such that  $(\sqrt{5})^2 = \left(\frac{p}{q}\right)^2$

$$g^2 (5 = \frac{p^2}{g^2})$$

$$g^2 \cdot 5 = \frac{p^2}{g^2}$$

$$g^2 \cdot 5 = p^2$$

$g \cdot g \cdot 5 = p \cdot p$   
my Contradiction!

Thus  $\sqrt{5}$  is irrational.  $\square$

Aug 29-10:23 AM

⊕

$$2 = \frac{2}{1}$$

$$\frac{1}{2}, 0.5\bar{3}, -0.000999$$

$$\sqrt{25} = 5 = \frac{5}{1}$$

$$\sqrt{4} = \frac{2}{1} = 2$$

⊖

$$\sqrt{2}, \sqrt{3}, \sqrt{11}, \sqrt{17}$$

$$\sqrt[3]{2}, \sqrt[3]{5}, \sqrt[3]{2}$$

$\pi, e$

Aug 29-10:38 AM

$x$	$x^2$	$\sqrt{x^2}$
1	1	1 $\leftarrow \sqrt{2}, \sqrt{3} ?$
2	4	$\sqrt{4} = 2$
3	9	$\sqrt{9} = 3$
4	16	$\sqrt{16} = 4$

$\leftarrow \sqrt{5}, \sqrt{6}, \sqrt{7}, \sqrt{8}$

Aug 29-10:41 AM

$$\frac{3}{4}; 3:4; 0.75$$

$$\frac{1}{3}; 1:3; 0.\overline{3}$$

$$W \subseteq \mathbb{Q} \text{ or } \mathbb{T}$$

Aug 29-10:44 AM