

August 21, 2015

What is a Rational number?

$$\mathbb{Q} = \left\{ \frac{a}{b} \mid a, b \in \mathbb{Z} \text{ and } b \neq 0 \right\}$$

#2) $\frac{a}{b} + \frac{c}{d}$
 $a, b, c, d \in \mathbb{Z} \text{ and } b, d \neq 0$

$\frac{a}{b} + \frac{c}{d} = \text{a Rational Number}$
unlike denominators

$$= \frac{ad + bc}{bd}$$

$\frac{a}{b} \cdot \frac{d}{d} = \frac{ad}{bd}$
 $\frac{c}{d} \cdot \frac{b}{b} = \frac{cb}{bd}$

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$$\mathbb{Q}_1 + \mathbb{Q}_2 = \left\{ \frac{a}{b} + \frac{c}{d} \mid a, b, c, d \in \mathbb{Z} \text{ and } b, d \neq 0 \right\}$$

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$CD = 7 \cdot 2 = 14$

$$\frac{5}{7} + \frac{1}{2} = \frac{10 + 7}{14} = \frac{17}{14}$$

$\frac{14}{7} = 2$ $\frac{5}{7} \cdot \frac{2}{2} = \frac{10}{14}$
 $\frac{14}{2} = 7$ $\frac{1}{2} \cdot \frac{7}{7} = \frac{7}{14}$

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#3)

$$x = 3.121121112...$$

$$y = 1.313313331...$$

$x + y$

$3.121121112... + 1.313313331...$

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$x = 2.5$ and $y = 1.3$

$x + y = 2.5 + 1.3$

$$\begin{array}{r} 2.5 \\ 1.3 \\ \hline 3.8 = x + y \end{array}$$

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#1) $-2.\overline{46}$

Let $x = 0.\overline{46}$

$$100x = 100(0.\overline{46})$$

$$100x = 46.464646...$$

$$-x = .464646...$$

$$99x = 46$$

$$x = \frac{46}{99}$$

$-2 \frac{46}{99}$

$$\frac{46}{99} = 99 \overline{) 46.0000}$$

$$\begin{array}{r} 0.464646 \\ 99 \overline{) 46.0000} \\ \underline{-396} \\ 640 \\ \underline{-594} \\ 460 \end{array}$$

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Distributive Prop.

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

$a = (-1)$
 $b = 6$
 $c = a$

$$(-1)(6+a) = (-1) \cdot 6 + (-1) \cdot a$$

Factoring

$$2(2+x) = 4 + 2x$$

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$t^3 + 64$
cube sum cube

$a = t$
 $b = 4$

$$a^3 \pm b^3 = (a \pm b)(a^2 \mp ab + b^2)$$

$$t^3 + 64 = (t + 4)(t^2 - 4t + 16)$$

$$x^2 + x - 42$$

larger number is pos.
opposite

$$(x+7)(x-6)$$

$$x^2 - 6x + 7x - 42$$

$$x^2 + x - 42$$

$+ \quad -$
 $7 \quad 6 = -42$

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