



REAL SUMS

Why

We want to add real numbers.¹

Definition

The *real sum* of two real numbers R and S is the set

$$\{t \in \mathbf{Q} \mid \exists r \in R, s \in S \text{ with } t = r + s\}.$$

Notation

We denote the sum of two real numbers x and y by $x + y$.

Properties

We can show the following.²

Proposition 1 (Associative). $x + (y + z) = (x + y) + z$

Proposition 2 (Commutative). $x + y = y + x$

Proposition 3 (Identity). *The set of negative rational numbers is the additive identity.*

We denote the additive identity of \mathbf{R} under $+$ by $0_{\mathbf{R}}$.

¹Future editions will expand.

²Accounts will appear in future editions.

