



Why

What are addition and multiplication for rationals? What are the identity elements?

Definition

We call the operation of forming rationals sums *rational addition*. We call the operation of forming rational products *rational multiplication*.

Results

It is easy to see the following.¹

Proposition 1. *The additive identity for \mathbf{Q} is $[(0_{\mathbf{Z}}, 1_{\mathbf{Z}})]$.*

Proposition 2. *The multiplicative identity for \mathbf{Z} is $[(1_{\mathbf{Z}}, 1_{\mathbf{Z}})]$.*

Notation

We denote the additive identity of \mathbf{Q} by $0_{\mathbf{Q}}$ and the multiplicative identity by $1_{\mathbf{Q}}$. We denote the set $\{q \in \mathbf{Q} \mid q \geq 0_{\mathbf{Q}}\}$ by \mathbf{Q}_+ .

Distributive

Proposition 3. *For rationals $x, y, z \in \mathbf{Z}$, $x \cdot (y + z) = x \cdot y + x \cdot z$.*²

¹Nonetheless, the full accounts will appear in future editions.

²An account will appear in future editions.

