Cross-Document Reference Example

Real Analysis

This file demonstrates direct PDF references provided by `notes-common.sty`. Each reference contains enough information to link to the corresponding item in the deployed `lec01.pdf`; no reference index is required

Example 1. definition natural number uses the document selected by `\xrefuse{lec01}`

Example 2. definition integer explicitly names a document in this project

Example 3. definition rational numbers explicitly names the project

Example 4. Proposition link: rationals form a field

Example 5. Convention link: zero is excluded from $\mathbb{N}_1$

Example 6. remark number set inclusions uses the fully qualified server, project, document, and item

Example 7. Multiple items can be linked together using definition integer, definition rational numbers

Example 8. The starred form definition natural number prints without a link

Example 9. Redirect link: an original ID that has been moved renders as a visible tombstone pointing to the new location. For example, definition converges to resolves through the redirect added when the predicate was renamed to `def:limit`

Function Definition Style

Give the function name, its domain and codomain, and its rule, joined by $\equiv$. Multiple inputs may be grouped into a pair

Example 1. Simple inline function:

$$f : \mathbb{R} \to \mathbb{R} \equiv x \mapsto x^2$$

Example 2. Function taking a pair:

$$g : \mathbb{R} \times \mathbb{R} \to \mathbb{R} \equiv (x, y) \mapsto x + y$$

Example 3. Identity function:

$$\mathrm{id} : A \to A \equiv x \mapsto x$$

Example 4. Function with cases:

$$\mathrm{sign} : \mathbb{R} \to \{-1, 0, 1\} \equiv x \mapsto \begin{cases} 1, & x > 0, \\ 0, & x = 0, \\ -1, & x < 0 \end{cases}$$

Example 5. Restricted codomain (nonnegative outputs):

$$\mathrm{sq} : \mathbb{R} \to \mathbb{R}_{\geq 0} \equiv x \mapsto x^2$$

Example 6. Function with a restricted domain:

$$\text{half} : \{n \in \mathbb{Z} \mid n \text{ even}\} \to \mathbb{Z} \equiv n \mapsto n/2$$

Example 7. Application of an anonymous mapsto (parens needed):

$$(x \mapsto x^2)(3) = 9$$

Example 8. Nested application:

$$h \equiv x \mapsto f(g(x)), \qquad f(y) \equiv y + 1,\ g(y) \equiv y^2$$