Info

This note found here
as a part of a collection
is written (completely with human hands) by Rupadarshi Ray,
created on December 9, 2024 10:24:49 AM,
and was last modified on June 12, 2026 11:49:34 AM.

$\mathcal{C}[0,1]$

Definition. **The space of all continuous functions $[0,1] \to \mathbb{R}$**

$$(\mathcal{C}^0[0,1], \|\|_\infty)$$

is a commutative $\mathbb{R}$-Banach algebra by pointwise addition and multiplication, with 1.

- operators or endomorphisms
  - $\int$ space.R.1.f R.cont.space cpt unit.int
- functionals or dual elements
  - $\int$ stamp.Rf.cont.space cpt.int to R
- Dual space of $\mathcal{C}^0[0,1]$

Current note has 2 direct children and 2 total descendants.

- stamp stamp
  - Rf subobjects of and functions on $\mathbb{R}^n, T^n, S^n, \mathbb{C}^n$
    - cont Continuous functions on $\mathbb{R}^d$
      - space cpt $\mathcal{C}[0,1]$
        - dual Dual space of $\mathcal{C}[0,1]$
        - int to R Riemann integral functional $\int_{[a,b]} : \mathcal{C}[a,b] \to \mathbb{R}$

And it has 5 siblings.

- stamp stamp
  - Rf subobjects of and functions on $\mathbb{R}^n, T^n, S^n, \mathbb{C}^n$
    - cont Continuous functions on $\mathbb{R}^d$
      - 0to1 w bd $\mathcal{C}_0[0,1]$

- 1with inf limit is unf Continuous functions on $\mathbb{R}$ with infinite limit are uniformly continuous
- interm Intermedia value property of continuous functions on intervals
- space $\mathcal{C}(U, X)$
- space cpt $\mathcal{C}[0, 1]$