Info

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Riemann integral functional $\int_{[a,b]} : \mathcal{C}[a,b] \to \mathbb{R}$

Definition. The **Riemann integral functional** is the $\mathbb{R}$-vector space endomorphism

$$\begin{aligned}\int_{[a,b]} : \mathcal{C}[a,b] &\to \mathbb{R} \\ f &\mapsto \int_{[a,b]} f\end{aligned}$$

- By

$$\left|\int_{[a,b]} f\right| \leq \int_{[a,b]} |f| \leq (\sup_{[a,b]} |f|) \int_{[a,b]} = (b-a)\|f\|_\infty$$

  so the integral operator is bounded $\iff$ continuous on $\mathcal{C}[a,b]$.
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Current note has 0 direct children and 0 total descendants.

- stem
  - subobjects of and functions on $\mathbb{R}^n, S^n, \mathbb{C}^n$ and its quotients $_\Gamma\backslash^{\mathbb{R}^n}, _\Gamma\backslash^{\mathbb{C}^n}$
    - Continuous functions on $\mathbb{R}^d$
      - $\mathcal{C}[0,1]$
        - Riemann integral functional $\int_{[a,b]} : \mathcal{C}[a,b] \to \mathbb{R}$

And it has 2 siblings.

- stem
  - subobjects of and functions on $\mathbb{R}^n, S^n, \mathbb{C}^n$ and its quotients $_\Gamma\backslash^{\mathbb{R}^n}, _\Gamma\backslash^{\mathbb{C}^n}$
    - Continuous functions on $\mathbb{R}^d$
      - $\mathcal{C}[0,1]$
        - Dual space of $\mathcal{C}[0,1]$
        - Riemann integral functional $\int_{[a,b]} : \mathcal{C}[a,b] \to \mathbb{R}$