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Lebesgue integral from measure of undergraph

Definition.

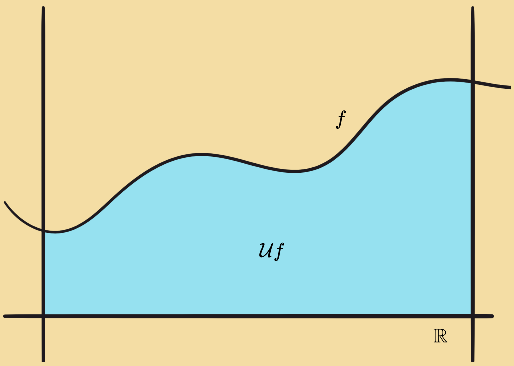
$$\mathcal{U}f := \left\{(x,y) \in \mathbb{R}^d \times \mathbb{R} \middle| 0 \le y < f(x)\right\}$$

Let

$$f : \mathbb{R}^d \to [0,\infty)$$

be a measurable positive function. Then the Lebesgue integral is the measure of the undergraph in $\mathbb{R}^{d+1}$

$$\int_{\mathbb{R}^d} f = m_{\mathbb{R}^{d+1}}(\mathcal{U}f)$$



Current note has 0 direct children and 0 total descendants.

- stamp stamp
  - Rf subobjects of and functions on $\mathbb{R}^n, T^n, S^n, \mathbb{C}^n$
    - Lmeas Lebesgue measurable subsets of and functions on $\mathbb{R}^n, T^n, S^n$
      - int undergraph Lebesgue integral from measure of undergraph

And it has 15 siblings.

- stamp stamp
  - Rf subobjects of and functions on $\mathbb{R}^n, T^n, S^n, \mathbb{C}^n$
    - Lmeas Lebesgue measurable subsets of and functions on $\mathbb{R}^n, T^n, S^n$
      - BMO Functions with uniformly bounded mean oscillations on cubes
      - decom bd Chebyshev's inequality
      - decom CZ Calderon-Zygmund decomposition
      - density Lebesgue density of measurable sets
      - DMO Functions with uniformly bounded mean oscillations on dyadic cubes
      - End int Volterra operator $\int_{[0,-]} : L^1_{\text{loc}}[0,1) \to \mathcal{C}[0,1)$
      - f Measurable functions on $\mathbb{R}^n$
      - f quant (ϵ, n)-measurable function
      - int Integrability and integral of measurable functions on $\mathbb{R}^n$
      - int HL Hardy-Littlewood maximal functions of $L^1_{\text{loc}}(\mathbb{R}^n)$
      - int mean Lebesgue averaging and differentiation
      - int monotone Integrals of a monotonically converging sequence of functions
      - int undergraph Lebesgue integral from measure of undergraph
      - Lorentz $L^{p,q}$
      - unit mass $\mathrm{E}([0,1]) = \mathrm{E}(0,1), \mathrm{E}([-\pi,\pi]) = \mathrm{E}(S^1)$