1. ~~A~~Reading announcements is your responsibility.

2. Let $p \in (0,1)$

Let $A_p = \left\{ x = \sum_{i=1}^{\infty} \frac{a_i}{2^i} : \frac{\sum_{i=1}^{n} a_i}{n} \xrightarrow[n\to\infty]{} p \right\}$

$\mu_p(A_p) = 1 \underset{\mu_p \text{ cont}}{\Longrightarrow} A_p$ uncble. Is this clear directly?

Last time $p = 1/2$, "explained" how you could $p \in \mathbb{Q}$.

A_p uncble. Is it obv. that it is uncble?

Is it obvious $A_p \neq \emptyset$?

STEP 7

$A_p \neq \emptyset, \ \forall p.$

$p = .65$

1010110. - - - - $\square$

$\vec{a}$ $a_1 \ a_2 \ a_3 \ a_4 \ a_5$ - - - - - - 11 - - $\frac{\sum^n a_i}{n} \to p$

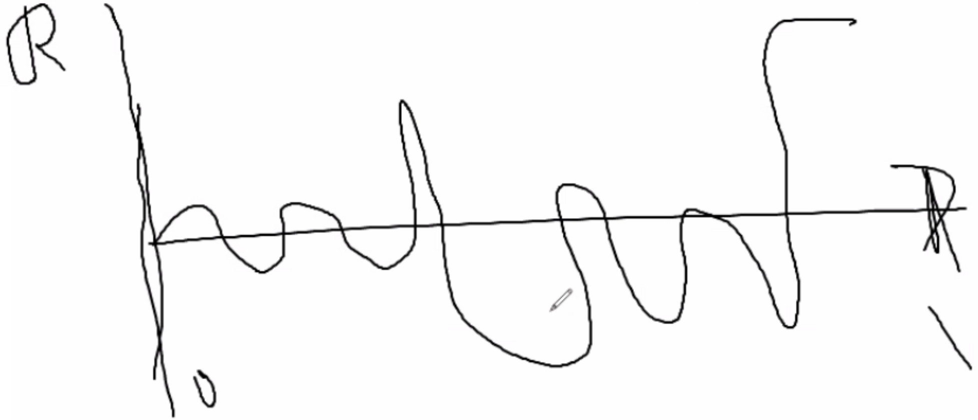
same

2^k 2 — 4 — 8 — 16 — 32 — 64 S

Fact change $\vec{a}$ anyway on S & still have density of p. Still have ctble # of choices

$\{0,1\}$ $\{0,1\}^n$ $\square$

zig zag fcn g



Lecture note

P83

$$\nu(A) := \int_A (2x-1)\,dx$$

$$(2x-1)\begin{cases} \geq 0 & \text{on } [1/2, 1] \\ \leq 0 & \text{on } [0, 1/2] \end{cases}$$

$P = [1/2, 1]$, $N = [0, 1/2)$. ✓

$A \subseteq P$ $\quad \nu(A) = \int_A \underbrace{(2x-1)}_{\geq 0 \text{ on } P}\,dx \geq 0$

$B \subseteq N$ $\quad \nu(B) = \int_B \underbrace{(2x-1)}_{\leq 0 \text{ on } N}\,dx \leq 0$

$$\nu^+(A) = \nu(A \cap P) = \int_{A \cap [1/2, 1]} (2x-1)\,dx$$

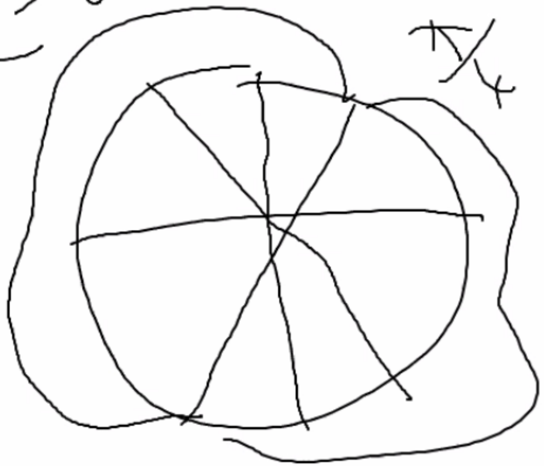
$$\nu^-(A) = -\nu(A \cap N) = \int_{A \cap [0, 1/2]} (1-2x)\,dx$$

$$\nu = \nu^+ - \nu^-$$

$$v(A) := \int_A \underbrace{\sin(2\pi x) - \cos(2\pi x)}_{\begin{cases} \geq 0 & \text{on } [1/8, 5/8] \\ \leq 0 & \text{on } [0, 1/8) \cup (5/8, 1] \end{cases}} dx$$

$A \subseteq [0,1]$

≥ 0



≤ 0

$P = [1/8, 5/8]$

$N = [0, 1/8] \cup [5/8, 1]$

Rest identical