Video Lectures: 4.1, 4.2, 4.3 posted on YouTube

HW2: Due Monday, October 19, 9pm.

- Former Problem 5 removed; reserved to HW3.
- New Problem 3 added.

Zoom Hour: Didn't happen last night (internet problems)

Try tonight: Thursday, 10/15, 8:30-9:30pm PT.
$A_n \subseteq A$, $A_n \uparrow A$, $\mu(A_n) \to \mu^*(A)$, and $\mu^*(A \setminus A_n) \to 0$.

*false if $\mu$ is not finite.*
If $X$ is a nonempty set in $\mathbb{R}$, $\alpha = \inf X$, then for any $z > \alpha$, there must exist $x \in X$ such that $\alpha \leq x \leq z$.

For any $\varepsilon > 0$, $\exists x \in X$ s.t. $x \leq \alpha + \varepsilon$.

(Otherwise, $\alpha + \varepsilon$ would be a lower bound for $X$.)

$\alpha = \inf X \geq \alpha + \varepsilon$
\[ (\Omega, 2^\Omega, \mu) \]
\[ \mu^* \sim d\mu \]

\[ [2^\Omega]_\mu \text{ becomes a metric.} \]

\[ E_1 \sim E_2 \iff d\mu(E_1, E_2) = 0. \]

\[ \bar{\mu}(E_1 \Delta E_2) = \mu^*(E_1 \Delta E_2) \]

\[ A \in A_n \rightarrow A \Rightarrow A + B \]

\[ \mu : A \rightarrow \mathbb{R} \]
\[ \bar{\mu} : \bar{A} \rightarrow \mathbb{R} \]

\[ \bar{\mu}(A) = \lim_{n \to \infty} \mu(A_n) \]