

MATH 280A: Probability Theory I

Thursday, October 22, 2020

* **Video Lectures**: 5.1, 5.2, 6.1, 6.2 posted on YouTube

* **Quiz 2**: **TODAY**, 1-1:50pm or 7-7:50pm.
↳ Covering up to Lecture 5.2.

* **HW1**: Grades published.

↳ Regrade window:

Wednesday, 10/21 8am
→ Friday, 10/23 8pm

* **HW3**: Due Monday, October 26, 9pm.

Ω is finite.

$$(X+Y)(\omega) := X(\omega) + Y(\omega).$$

$$X: \Omega \rightarrow \mathbb{R}, \quad Y: \Omega \rightarrow \mathbb{R}$$

$$\mathbb{E}(X) = \sum_{\omega \in \Omega} X(\omega) \mathbb{P}(\{\omega\}).$$

$$\mathbb{E}(Y) = \sum_{\omega \in \Omega} Y(\omega) \mathbb{P}(\{\omega\}).$$

$$\therefore \mathbb{E}(X+Y) = \sum_{\omega \in \Omega} (X(\omega) + Y(\omega)) \mathbb{P}(\{\omega\})$$

$$= \sum_{\omega \in \Omega} (X(\omega) \mathbb{P}(\{\omega\}) + Y(\omega) \mathbb{P}(\{\omega\}))$$

$$= \sum_{\omega \in \Omega} X(\omega) \mathbb{P}(\{\omega\}) + \sum_{\omega \in \Omega} Y(\omega) \mathbb{P}(\{\omega\})$$