Instructor: Leo Goldmakher

Williams College
Department of Mathematics and Statistics

MATH 402 : MEASURE THEORY

Problem Set 3 – due Monday, October 5th

INSTRUCTIONS:

You should aim to submit this assignment (via Glow) before Monday at **6pm**. Late assignments may be submitted by **3pm** on Tuesday; however, 5% will be deducted for submissions past Monday 6pm. Assignments will not be accepted after 3pm Tuesday under any circumstances. Please label your file in the format `Lastname-PS3`. If you're having difficulty scanning your work in a way that's legible, please let me or the TA know and we can try to help.

3.0 Read the textbook up through page 22.

3.1 Prove that $E \subseteq \mathbb{R}^n$ is measurable if and only if

$$m_*(S) = m_*(S \cap E) + m_*(S \cap E^c)$$

for every $S \subseteq \mathbb{R}^n$.

3.2 Textbook exercises[1] 4, 5, 9, 11, 16, 20, 26, 29, 37

[1] These are on pages 37–44; Exercises $\neq$ Problems!