

Statistics 522, Problem Set 1

Wellner; 1/9/2013

Reading:

Shorack, PFS Course Notes, Chapter 7, Sections 4-5, pages 130 - 146;
Shorack, PFS (2000), Springer, Chapter 8, Sections 4-6, pages 158-178.

Due: Wednesday, January 16, 2013.

1. PFS Course Notes, exercise 3.2.3, page 42: Consider a measure space $(\Omega, \mathcal{A}, \mu)$. Let $\mu_0 \equiv \mu|_{\mathcal{A}_0}$ for a sub σ -field \mathcal{A}_0 of \mathcal{A} . Starting with indicator functions, show that $\int X d\mu = \int X d\mu_0$ for any \mathcal{A}_0 -measurable function X .
2. Exercise 7.4.1, page 131, PFS Course Notes (or Exercise 8.4.1, page 159, PFS (2000)).
3. Exercise 7.4.2, page 132, PFS Course Notes (or Exercise 8.4.2, page 161, PFS (2000) plus the following: (C) Mimic discussion 4.2 in case $T = X_1 + X_2$ instead.)
4. Exercise 7.4.4, page 139, PFS (or Exercise 8.4.4, page 167, PFS (2000) Remark: In proving the statement (26), page 136 (or page 163), it is to be understood that $E(XY)$ exists; alternatively, show that the statement holds for all *bounded* \mathcal{D} -measurable random variables X .
5. Exercise 7.4.5, page 139 PFS, (or Exercise 8.4.5, page 167, PFS (2000)).