Statistics 522, Problem Set 1, Corrected Version

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 $\sigma-$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 134, PfS Course Notes – with "Discussion 4.2" changed to "Discussion 4.3" (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 of $T = \{X_1^2 + X_2^2\}^{1/2}$.)

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)).