

## 7. Übung Mathematische Statistik WS15

All problems from chapter 7, and

1. Show that

$$W_n = \int_{-\infty}^{\infty} (\hat{F}_n(x) - F(x))^2 dF(x) = \frac{1}{12n^2} + \frac{1}{n} \sum_{k=1}^n \left( F(X_{n:k}) - \frac{2k-1}{2n} \right)^2.$$

2. Show that

$$A_n = \int_{-\infty}^{\infty} \frac{(\hat{F}_n(x) - F(x))^2}{F(x)(1-F(x))} dF(x) =$$
$$-n - \frac{1}{n} \sum_{k=1}^n ((2k-1) \log(F(X_{n:k})) + (2n-2k+1) \log(1-F(X_{n:k}))).$$