

Advanced Mathematical Statistics

2019/2020: Semester I

Tutorial 1

Due date: 2019.10.06

1. Let X, X_1, X_2, \dots be a sequence of random variables. Show that $X_n \xrightarrow{p} X$ if and only if

$$E\left(\frac{|X_n - X|}{1 + |X_n - X|}\right) \rightarrow 0, \quad \text{as } n \rightarrow \infty$$

2. Prove that $O_p(1) + o_p(1) = O_p(1)$