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# Financial Mathematics 1 - Spring term 2015

**Exercise sheet no.2 (19.3.2015)**

**Exercise 1**: Let $(\Omega, \mathcal{F}, \mathcal{P})$ be a probability space and let $A_n \in \mathcal{F}$, $n \geq 1$ be increasing, i.e. $A_n \subset A_{n+1}$ for any $n \geq 1$. Show that $P$ is continuous from below, i.e.

$$P(\bigcup_{n\geq 1} A_n) = \lim_{n\to\infty} P(A_n).$$

**Exercise 2**: Show Proposition 4.2 of the Probabilistic Background Part of the lecture. For the proof of 4.2(ii) you may assume that $\mathcal{A}_1$, $\mathcal{A}_2$, are finitely generated just as in the proof for existence in Definition 4.1.

**Exercise 3**: Explain why $(\phi_n^0)_{n=0,\ldots,N}$ as defined by (5) and (6) in the proof of Proposition 2.4 of the Finance Part of the lecture satisfies all the desired properties.

**Please drop the solutions into the homework box for the lecture at the basement of building no. 25 until 26.3.2015, 6 pm**