Lecture 14: Continuing convergence of random variables

Relationships between types of convergence

- If $X_n \xrightarrow{a.s.} X$, then $X_n \xrightarrow{p} X$
- If $X_n \xrightarrow{p} X$, then $X_n \xrightarrow{d} X$
- If $X_n \xrightarrow{d} c$, where c is a constant, then $X_n \xrightarrow{p} c$

Practice question

Suppose that $X_1, X_2, \ldots \overset{\text{iid}}{\sim} \text{Uniform}(0,1)$. Then $X_{(n)} \xrightarrow{\text{p}} 1$.