6.13. Fix some $v > 0$. Clearly, $\liminf_n(S_n/n) \geq \liminf_n(S_n^v/n)$, where $S_n^v := \sum_{i=1}^n X_i^v$, and $X_i^v := X_i \mathbf{1}_{\{X_i \leq v\}}$. By the law of large numbers, $\liminf_n(S_n^v/n) = \lim_n(S_n^v/n) = \mathrm{E}[X_1; X_1 \leq v]$. Let $v \uparrow \infty$ to finish.