**Proposition 3.1.** *If $F_X$ is a distribution function, then*

1. $\lim_{x \to -\infty} F_X(x) = 0$ *and* $\lim_{x \to \infty} F_X(x) = 1$.
2. $F_X(x)$ *is a nondecreasing function of* $x$. *That is, if* $s < t$, *then* $F_X(s) \leq F_X(t)$.
3. $F_X(x)$ *is right continuous. That is, for every* $x_0$,

$$\lim_{\substack{h \to 0 \\ h > 0}} F_X(x_0 + h) = F_X(x_0).$$