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Helly-Bray theorem

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Let F, F_1, F_2, \dots be distribution functions. If F_n converges <http://planetmath.org/Convergence> to F , then

$$\int_{\mathbb{R}} g(x) dF_n(x) \xrightarrow{n \rightarrow \infty} \int_{\mathbb{R}} g(x) dF(x)$$

for each continuous bounded function $g : \mathbb{R} \rightarrow \mathbb{R}$.

Remark. The integrals involved are Riemann-Stieltjes integrals.