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Convergence and comparison results for Henstock-Kurzweil and McShane integrable vector-valued functions. (English) Zbl 1240.26025

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Summary: A monotone convergence theorem is proved for Henstock-Kurzweil and McShane integrable functions from a compact real interval $[a, b]$ to an ordered Banach space X with a regular order cone X_+. As an application we show that, if X is a weakly sequentially complete Banach space and X_+ is normal order cone, then $f : [a, b] \to X_+$ is Henstock-Kurzweil integrable if and only if f is McShane integrable. If f is strongly Henstock-Kurzweil integrable, we prove that f is McShane integrable without the weak completeness hypothesis on X.

MSC:

26B12 Calculus of vector functions
28B15 Set functions, measures and integrals with values in ordered spaces
46G10 Vector-valued measures and integration

Keywords:

Henstock-Kurzweil integrability; McShane integrability; ordered Banach space; monotone convergence theorem