Uniform convexity. III.


[Parts I and II appeared in the same Bull. 47, 313–317, 504–507 (1941); cf. MR0003446 (2,221b), 314.] It is shown that a Banach space which is locally uniformly convex near some point \( b \) (in the sense that the condition for uniform convexity holds in some sphere about \( b \)) is isomorphic to a uniformly convex space. Another result gives a necessary condition for isomorphism with a uniformly convex space. For a suitably restricted Banach space \( T \) of real functions on a range \( S \) the following result is established. Let \( B_s, s \in S \), be Banach spaces and \( P_T(B_s) \) consist of those functions \( b = b_s \) with \( b_s \in B_s \) and \( (\|b_s\|) \in T \). Define a norm in \( P_T(B_s) \) by \( \|b\| = \|\|b_s\|\| \). The space \( P_T(B_s) \) is uniformly convex if and only if \( T \) is uniformly convex and the spaces \( B_s \) have a common modulus of convexity.

Reviewed by N. Dunford

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