PROBLEMS FOR SOLUTION

P. 156. Let G be a group with right invariant metric d_R .
Suppose right multiplication is continuous. Then

(i)   inversion if continuous at the identity e ;

(ii) if left multiplication is also continuous, then inversion is continuous everywhere (i.e. G is a topological group;

(iii) if G possesses a left invariant metric d_L equivalent to d_R , then left multiplication is continuous and G is a topological group (equivalent means gives the same topology).

J. Marsden, University of California, Berkeley

P. 157. Find a topological space X which is locally compact Hausdorff and second countable and an equivalence relation $\sim$ on X such that the quotient space $X/\sim$ is not locally compact.

J. Marsden, University of California, Berkeley

P. 158. Does there exist an infinitely differentiable function of a real variable, which is nowhere analytic?

R. Giles, Queen's University, Kingston

SOLUTIONS

P. 144. Prove that a normed linear space X is an inner product space if and only if for each set $S \subset X$ and $z \in S$, S_z is convex where

$$S_z = \{ x : \| x - z \| = \inf_{y \in s} \| x - y \| \}$$

K. L. Singh, Memorial University

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