M11482 PROBLEM SET 3

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*Problems marked with * are more difficult; we think...*

problem numba Problem statement

1. Topological basis for metric spaces. Show the open balls of a metric space (X, d) form a basis for the topology of the metric space.

2. Basis of a topology "spans" open sets Given a basis $\mathscr{B}$ for the topological space (X, τ), show every open set of X is a union of basis elements.

3. Metric $\implies$ Hausdorff Show that metric spaces are also Hausdorff spaces.

4. Unique Limit Points Show Hausdorff spaces have unique limits of sequences.

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