Homogeneous spaces as coset spaces of groups from special classes

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Let X be a coset space of some topological group. Can X be a coset space of a topological group from some class ((metrizable) compact, Polish, ω-narrow, ω-balanced, etc.)?

From results of R. Arens and E. Effros, G. Ungar deduced that any homogeneous compact metrizable space is a coset space of a Polish group. From results of R. Arens and L. Kristensen it follows that metrizable compact space is a coset space of a compact metrizable group iff it is metrically homogeneous. N. Okromeshko showed that the class of coset spaces of compact groups coincides with the class of isometrically homogeneous compacta. J. van Mill proved that separable metrizable and Polish SLH spaces are coset spaces of separable metrizable and Polish groups respectively.

The results when a coset space is a coset space of ω-narrow or ω-balanced group will be presented.

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