Banach-Krein-Šmulian theorem

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Let E be a Banach space. A convex subset C of the dual space E^* is closed in the weak-$*$ topology if and only if the intersection of C with the ball $B_r(0)$ is weak-$*$ closed for every $r > 0$.

References

[1] Dunford, N., and J. T. Schwartz, *Linear Operators*, Part I, Interscience Publishers, 1967.