Weak convergence

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Hello,

In the following, C denotes the complex numbers.
Let E be a complex Banach space, and A a subset of E. My book calls A "weakly closed" whenever for any sequence (a_n) of elements of A, if lim x*(a_n)=x*(a) for any bounded linear functional x*: E−>C, then a is in A.

A natural question −that is not mentioned in my book− would be to determine whether a weakly closed set A is closed for the weak topology, whose subbasis is given by {x*^(−1)(U); x*: E−>C bounded, U open set of C}.

I fail when trying to prove that whenever a is in Adh(A)−A, then there exists a sequence (a_n) of elements of A weakly converging to a. The fact is I can control the behaviour of a_n according to a finite number of x* only. Any suggestion ? − a one word answer would suffice, I'd just want to know if I should try proving it or not −.

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