

## Re: Extended real line question

---

*Source:* <http://sci.tech-archive.net/Archive/sci.math/2007-05/msg04978.html>

---

- *From:* José Carlos Santos <[jcsantos@xxxxxxxx](mailto:jcsantos@xxxxxxxx)>
  - *Date:* Mon, 28 May 2007 22:22:59 +0100
- 

On 28-05-2007 21:22, mathman wrote:

Consider the extended real line  $[-\infty; +\infty]$  (where " $\infty$ " is the term used to denote "infinity"). It can be naturally equipped with the order topology.

I would like to know how to show that this extended real line is the closure of the (classical) real line.

Every neighborhood of  $+\infty$  contains some interval of the form  $(x, +\infty]$  and therefore it contains real numbers. So  $+\infty$  belongs to the closure of real line.

The real line without  $\infty$  or  $-\infty$  is a closed set,

\*Every\* topological space is a closed subset of itself.

so those "numbers" aren't in the closure under ordinary topology (generated from open intervals).

No? Then where is the fault in my proof?

Best regards,

Jose Carlos Santos

.