MATHEMATICS

Countable sets in $\mathbb{R}$ are Borel sets

Asked 7 years, 4 months ago Active 7 years, 4 months ago Viewed 3k times

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I am aware that this is a very general question, but why is every countable set in the real numbers a Borel set?

real-analysis measure-theory

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edited Mar 14 '13 at 8:01
Martin
7,321 23 49

asked Mar 13 '13 at 10:17
user62487
413 1 4 14

3 Do you know what "Borel set" means? – Chris Eagle Mar 13 '13 at 10:19

3 And no, this isn't a very general question. This is a very specific question. – Chris Eagle Mar 13 '13 at 10:19

1 Answer

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Every singleton is a Borel set, $\{x\} = \bigcap_{n\in\mathbb{N}}(x - \frac{1}{n}, x + \frac{1}{n})$.

And the countable union of Borel sets is a Borel set.

answered Mar 13 '13 at 10:21
Asaf Karagila ♦
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thank you! with more or less the same approach I could show now that countable sets in R have measure zero. – user62487 Mar 13 '13 at 16:09