

Determine whether or not \mathbb{R}^{ω} is connected in the uniform topology.

Repeating the argument in the book for the box topology we see that \mathbb{R}^{ω} is the union of all bounded and all unbounded sequences then for $\epsilon > 0$

$B(x, \epsilon)$ consists entirely of unbounded sequences if x is unbounded and bounded sequences if x is bounded. Thus \mathbb{R}^{ω} is not connected in the uniform topology.