# Lecture 16

Delta functions and distributions: finished notes from previous lecture.

**Further reading:** See the books *Generalized Functions* by Gel'fand and Shilov and *A Guide to Distribution Theory and Fourier Transforms* by Strichartz referenced at the end of the notes. Wikipedia has a decent article on distributions. The idea that there are functions $\phi(x)$ which are infinitely differentiable but are zero outside of a finite region is a bit counterintuitive if you think about the interface between the zero and nonzero regions, but it is quite possible; see bump function on Wikipedia for an elaboration on the example I gave in class, and a proof that the derivatives are continuous here. In practice, however, we will almost never have to explicitly construct test functions to talk about distributions.

18.303 Linear Partial Differential Equations: Analysis and Numerics

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