(i) Find 5 functions \( f : \mathbb{R} \to \mathbb{R} \) that decay to zero, \( f(x) \to 0 \) for \( |x| \to \infty \), such that your instructor would not be able to compute the Fourier transform. Use Wolfram Alpha (or your software of choice) to compute the Fourier transform.

(ii) Graph the function and its Fourier transform (real and imaginary part separately); for each triple, point to one characteristic of the graphs and how it is reflected in the Fourier transform.

Due Wednesday, September 14, in class.