1. Plot the given functions and find their Fourier Transforms

   (a) $f(x) = \begin{cases} -1 & \text{if } -1 < x < 0 \\ 1 & \text{if } 0 < x < 1 \\ 0 & \text{otherwise} \end{cases}$

   (b) $f(x) = \begin{cases} 1 - |x| & \text{if } |x| \leq 1 \\ 0 & \text{otherwise} \end{cases}$

Here, let us consider both problems individually.

   (a) First, let us consider our first given equation:

   $f(x) = \begin{cases} -1 & \text{if } -1 < x < 0 \\ 1 & \text{if } 0 < x < 1 \\ 0 & \text{otherwise} \end{cases}$

   Here, let us plot our given function:

   First image here

   Now, let us find the Fourier Transform of this problem.

   Here, let us consider