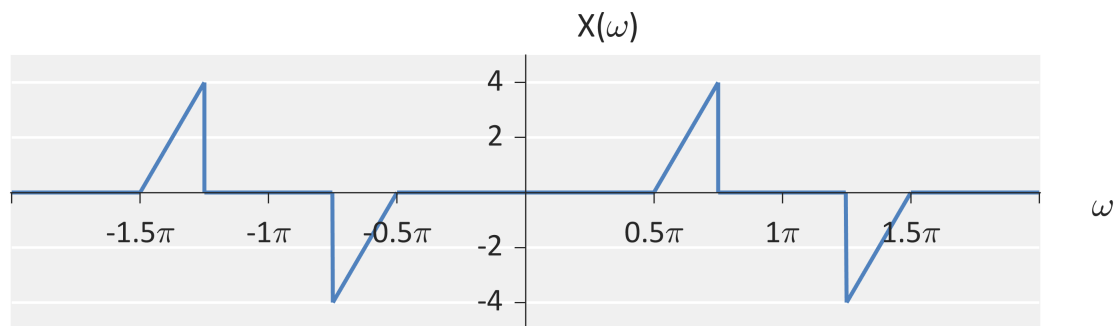**Question #1:**   Consider the DTFT of $x[n]$, shown below.

(a) *(4 pts)* Sketch the DTFT of $x[n]$ after downsampling by 2 (without an anti-aliasing filter).

(b) *(4 pts)* Sketch the DTFT of $x[n]$ after downsampling by 4 (without an anti-aliasing filter).

(c) *(4 pts)* Sketch the DTFT of $x[n]$ after downsampling by 2 (with an anti-aliasing filter).