

Question #1: Determine the discrete-time Fourier transform (DTFT) or inverse DTFT for the following equations. Use the discrete-time transform tables on the course website.

(a) $x[n] = (0.2)^n u[n] * (0.5)^{n-14} u[n-12]$

(b) $x[n] = (-1)^n$

(c) $X(\omega) = \frac{e^{-j\omega 4}}{5 - e^{-j\omega}}$

(d) $X(\omega) = \frac{\pi}{j} \sum_{k=-\infty}^{\infty} [\delta(\omega - \pi/2 - 2\pi k) - \delta(\omega + \pi/2 - 2\pi k)]$