

Date: 10/23/2024, Name of the student: _____

Q. A signal $x(t)$ is sampled with no aliasing using an ideal sampler. The spectrum is given below:



(a) Determine the sampling period T_s used. (5 points)
Check diagram to see what is Ω_s .

(b) Determine the signal $x(t)$.

Hint (1) Spectrum $X(\Omega) = \sigma(\Omega + \pi) - 2\sigma(\Omega) + \sigma(\Omega - \pi)$

$$e^x e^y = e^{x+y}$$

$$e^x + e^y \neq e^{x+y}$$

(2) Apply duality property to first determine the Fourier transform of a similar time-domain signal. (5 points)