

Homework 8

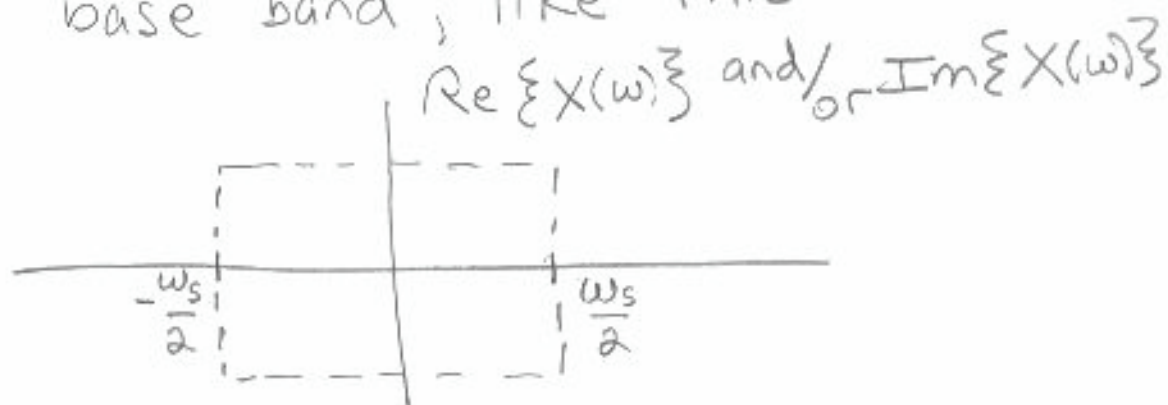
- ① For each $x(t)$ sampled at its particular ω_s , graph $X(\omega)$ and state whether aliasing is occurring. If so, what is the aliased signal?

A) $x(t) = \sin(10t)$ $\omega_s = 18$

B) $x(t) = 6$ $\omega_s = \pi$

C) $x(t) = \cos(4t)$ $\omega_s = 2$

note: graphs should include a dotted box around the base band, like this



For the following find the z -transform, and sketch the poles and ROC on the z plane

$$\textcircled{2} \quad x[n] = 3\delta[n] + \delta[n-2] + \delta[n+2]$$

$$\textcircled{3} \quad x[n] = u[n] - u[n-10]$$

show that the following
 z -transforms are true

$$\textcircled{4} \quad \cos[n\omega_0]u[n] \xleftrightarrow{z} \frac{1 - (\cos\omega_0)z^{-1}}{1 - 2(\cos\omega_0)z^{-1} + z^{-2}}$$

$$\textcircled{5} \quad x[-n] \xleftrightarrow{z} X\left(\frac{1}{z}\right)$$