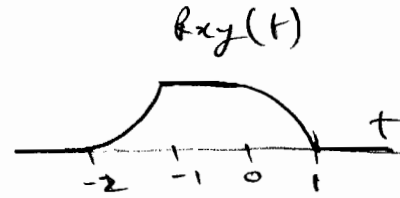


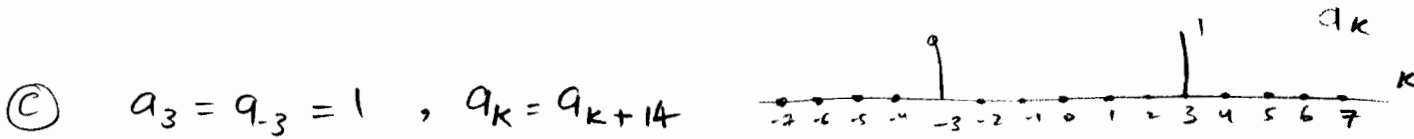
I

(a) i- $R_{xx}(0) = 2$

ii- $R_{xy}(t) = \begin{cases} \frac{1}{2}t^2 + 2t + 2 & -2 < t < -1 \\ \frac{1}{2} & -1 < t < 0 \\ \frac{1}{2} - \frac{1}{2}t^2 & 0 < t < 1 \\ 0 & \text{otherwise} \end{cases}$

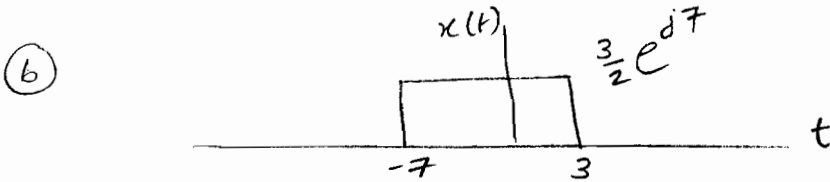


- (b) i- $a_0 = 2$
 ii- $a_1 = \text{zero}$
 iii- $f_3 = 3\text{Hz}$



II

(a) i- $X(e^{j\omega}) = 2 + 2\cos\omega$
 ii- $Y(e^{j\omega}) = (1 + e^{-j5\omega})(2 + 2\cos\omega)$



III

(a) $X(\omega) = \frac{4 \sin \omega}{\omega^3} - \frac{4 \cos \omega}{\omega^2}$ (for $\omega \neq 0$)

- (b) i- $x_{\text{even}}(t) = \text{zero}$
 ii- $\text{Imag}(x(t)) = \text{zero}$ } why? see Table 1 (real & odd signals)

