

Reading: O&W-????

S8) Given the time function $x(t)$ as

$$x(t) = \delta(t+1) - 2\delta(t) + \delta(t-1)$$

- i) Determine the Fourier transform of $x(t)$ by direct integration and check your result using Tables 4.1 and 4.2 in the text.
- ii) Using the answer to Problem S7, and the Fourier transform properties of differentiation and time shifting, verify the answer that you got for part i).
- iii) Use the answer to S7 and the integration properties of Fourier transforms to determine the Fourier transform of

$$x(t) = \begin{cases} 0 & t < -1 \\ \frac{(t+1)^2}{2} & -1 < t < 0 \\ 1 - \frac{(1-t)^2}{2} & 0 < t < 1 \\ 1 & 1 < t \end{cases}$$

S9) Find the solution to Problem 8.22 in the text

S10) Determine the impulse response for the following ideal highpass filter

$$H(j\omega) = \begin{cases} 1 & |\omega| > W \\ 0 & |\omega| < W \end{cases}$$