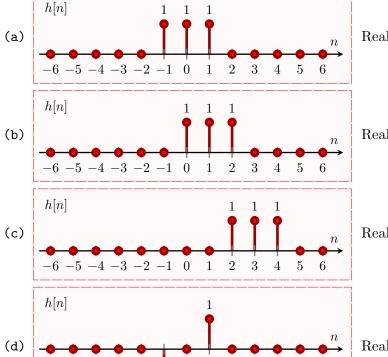## ENGN2228 Signal Processing

HOMEWORK 8

Homework 8-1

For each of the following pulse responses shown in the figures:

(i) give an expression for the pulse response $h[n]$,

(ii) the frequency response

$$H(e^{j\omega}) = \sum_{n=-\infty}^{\infty} h[n]e^{-jn\omega},$$

(iii) say whether $H(e^{j\omega})$ as a function of ω is even or odd

(iv) discuss the phase of $H(e^{j\omega})$ and by looking at the slope say what the (group) delay is

(v) and sketch/plot the magnitude $\left|H(e^{j\omega})\right|$

(a) Real and even.

(b) Real and causal.

(c) Real with larger delay.

(d) Real and odd.

(e) Imaginary and even.

(f) Imaginary and odd.

(g) Real, even and spaced out.

(h) Real, even and spaced out.

(i) Real, even and spaced out.

(j) Mixed real and imaginary.