

# Dsp Lab 6

Dan Mann

2022-11-07

$$1. \quad y(n) = \frac{1}{3}(x(n) + x(n-1) + x(n-2))$$

$$a) \quad Y(z) = \frac{1}{3}(X(z) + X(z)z^{-1} + X(z)z^{-2})$$

$$b) c) \quad H(z) = \frac{Y(z)}{X(z)} = \frac{1}{3}(1 + z^{-1} + z^{-2})$$

$$d) \quad H(e^{j\omega}) = \frac{1}{3}(1 + e^{-j\omega} + e^{-2j\omega})$$

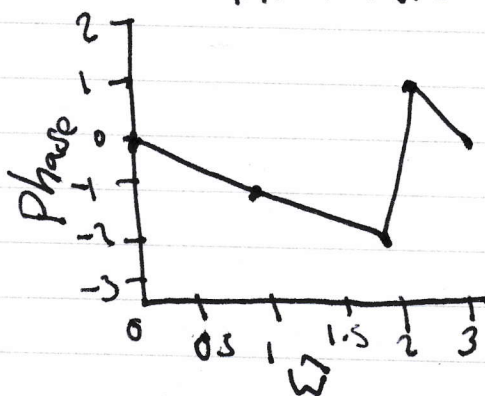
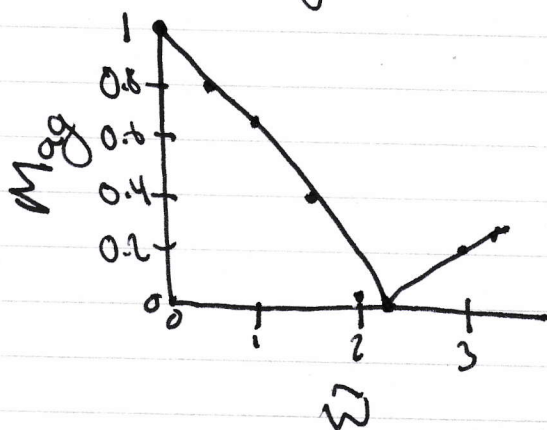
$$2. \quad H(e^{j\omega}) = \frac{1 + e^{-j\omega} + e^{-2j\omega}}{3}$$

$$= e^{-j\omega} \frac{(e^{j\omega} + 1 + e^{-j\omega})}{3}$$

$$= e^{-j\omega} \frac{(2\cos(\omega) + 1)}{3}$$

Mag of Transfer

Phase of Transfer



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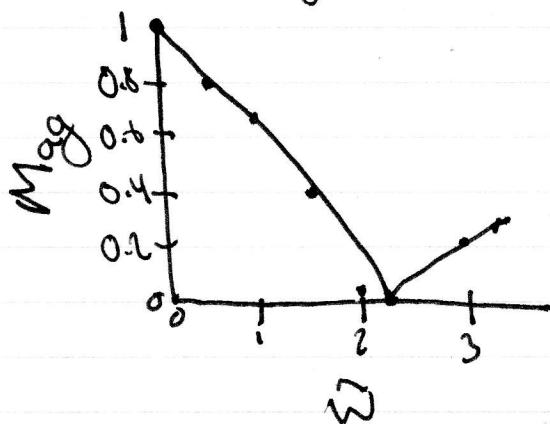
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