
Homework 8
Due: Thursday, November 2, 2006, at 5pm
Homework 6 GSI: June Wang

Reading OWN Chapter 8.

Practice Problems *(Suggestions.)* OWN 8.8, 8.13, 8.20.

Problem 1 *(AM Communication Systems.)*

OWN Problem 8.21.

Problem 2 *(Phase synchronization in communication systems.)*

OWN Problem 8.26.

Problem 3 *(Single-sideband amplitude modulation.)*

OWN Problem 8.29.

Problem 4 *(Quadrature Multiplexing.)*

OWN Problem 8.40

Problem 5 *(PAM.)*

OWN Problem 8.42

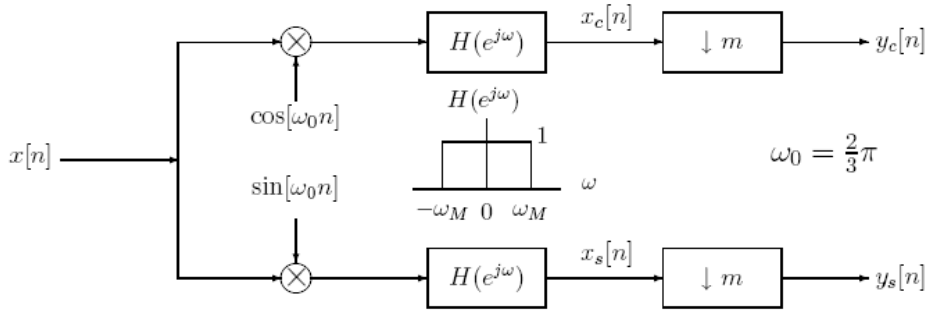
Problem 6 *(PAM.)*

OWN Problem 8.44

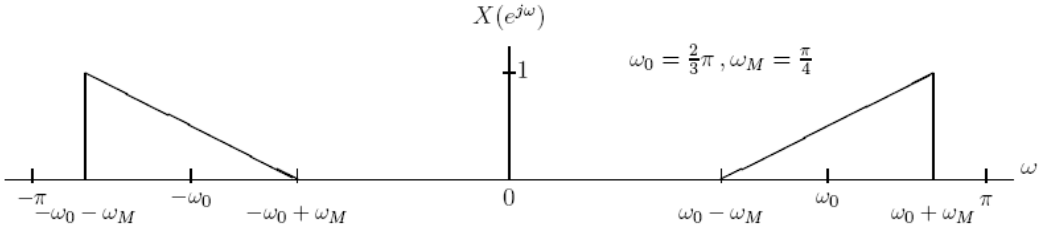
(One more problem on next page)

Problem 7

Consider the following system



$x[n]$ is a real-valued DT signal whose DTFT for $-\pi < \omega < \pi$ is given by



(a) Sketch the DTFT for $x_c[n]$ and $x_s[n]$ for $-2\pi \leq \omega \leq 2\pi$

(b) How much can one downsample without aliasing, i.e., what is the maximum integer value of m?

(c) Design a system which recovers the signal $x[n]$ from $y_c[n]$ and $y_s[n]$.