

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN
Department of Electrical and Computer Engineering

ECE 498MH SIGNAL AND IMAGE ANALYSIS

Homework 6

Fall 2013

Assigned: Friday, October 18, 2013

Due: Friday, November 1, 2013

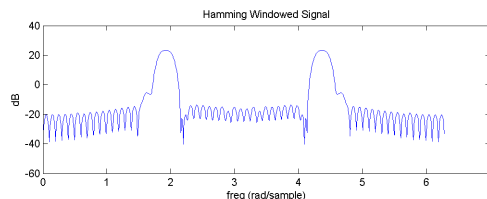
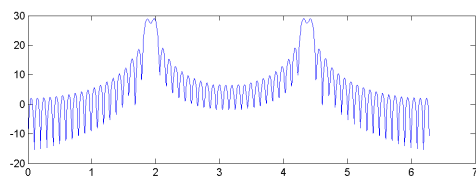
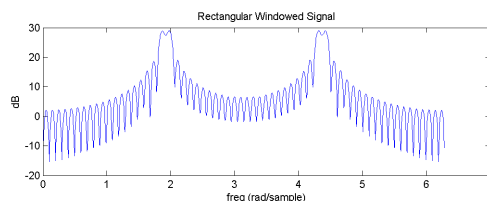
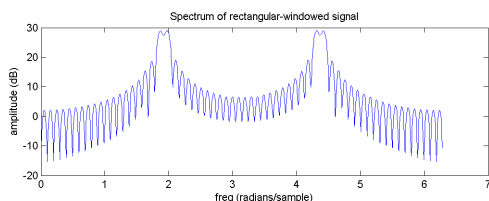
Reading: SPF Chapters 7 and 8

Problem 6.1

$$(a) U(\omega) = \frac{1}{1-e^{-j\omega}}, (b) R(\omega) = \frac{\sin(\omega(2M+1)/2)}{\sin(\omega/2)}, (c) \omega_z = \frac{2\pi}{2M+1},$$

$$(d) R\left(\frac{3\pi}{2M+1}\right) = -\frac{1}{\sin(\frac{3\pi}{2M+1})} \approx -\frac{2M+1}{3\pi} = -\frac{1}{3\pi} R(0)$$

Problem 6.2



,

