Problem Set 5
Filter Design

Issued: Tuesday October 4, 2005.   **Due:** Thursday October 13, 2005.

Reading: Refer to the project for suggested reading on filter design.

Problem 5.1

OSB Problem 7.32

Problem 5.2

OSB Problem 7.42

Problem 5.3

Consider the design of a lowpass Type I linear-phase FIR filter by means of the Parks-McClellan algorithm.   Use the alternation theorem to argue that the approximation must decrease monotonically in the "don't care" region between the passband and the stopband approximation intervals. *Hint:* Show that all the local maxima and minima of the trigonometric polynomial must be in either the passband or the stopband to satusfy the alternation theorem.

Problem 5.4

OSB Problem 7.39

Problem 5.5

OSB Problem 7.51

Problem 5.6

OSB Problem 7.50

Problem 5.7 (Optional)

OSB Problem 7.48

Problem 5.8

OSB Problem 7.49

Problem 5.9

Write a detailed paragraph describing your progress on Project I