**ECPE 121: Digital Signal Processing**

**Mini Exam 7 (25 pts total)**

1. (11 pts) A periodic signal repeats every 4 samples. Its Fourier series coefficients are . ­­ is passed through a causal system whose transfer function is . Obtain an analytical expression for the resulting output signal . Your answer must contain only real-valued functions and must be simplified as much as possible.
2. (10 pts) is a periodic signal (the symbol above the 1 indicates the position of the origin). Obtain the Fourier series coefficients of . Show all your work.
3. (4 pts) The Fourier series coefficients of a periodic signal of period 4 are . Sketch the power density spectrum of as a function of frequency in rad/sample. Also use your results to determine the average power of .