

# EE 503

Homework #5  
Due: Dec. 8, 2005

**Pr.1:** Problem 3.13 from Hayes

**Pr.2:** Problem 3.26 from Hayes

**Pr.3:** Problem 4.1 from Hayes

**Pr.4:** Problem 4.2 from Hayes

**Pr.5:** Problem 4.12 from Hayes

**Pr.6:** Problem 4.13 from Hayes

**Pr.7:** Problem 4.24 from Hayes

**Pr.8:** [Haykin, Adaptive Filter Theory, 4th Edition, Problem 1.7]

Consider an auto-regressive process  $u(n)$  of order two described by the following equation

$$u(n) = u(n-1) - 0.5u(n-2) + v(n)$$

where  $v(n)$  is white noise with zero mean and variance 0.5.

- a) Write the Yule-Walker equations for the process.
- b) Solve these equations for the autocorrelation values  $r(1)$  and  $r(2)$ .
- c) Find the variance of  $u(n)$ .