

### HOMEWORK #7

Due Friday, November 21, 2008 (5:00 p.m.)

#### Problems:

1. Problem 7.16 (a)-(c)
2. Problem 7.18
3. Problem 7.21
4. Problem 8.6
5. Problem 8.12
6. Let  $V[n]$  be a Bernoulli random sequence such that  $P[V(n) = +1] = p$  and  $P[V(n) = -1] = 1 - p$  with  $0 < p < 1$ . Define the random sequence

$$X[n] = \begin{cases} \sum_{k=1}^n \alpha^{n-k} V[k], & n > 0 \\ 0, & n \leq 0 \end{cases} \quad (1)$$

where  $|\alpha| < 1$ . Use the Doob-Meyer decomposition to find the predictable part  $Y[n]$  and the Martingale sequence  $U[n]$  of  $X[n]$ .