Economics 245B
Exercise 4

Consider the moving-average process

$$Y_t = U_t + \theta U_{t-1}, \quad t = 1, \ldots, n$$

in which $\{U_t\}_{t=1}^n$ is a sequence of uncorrelated random variables with mean 0 and variance σ^2.

a) Derive the log-likelihood function for the joint density.

b) Use the Kalman filter to derive the log-likelihood function.