

Economics 312  
Daily Problem #28

Spring 2020  
Revised Date: April 3

1. Suppose that  $y_t$  is autocorrelated but stationary, so it has  $E(y_t) = \mu$  at every  $t$ . Explain *intuitively* why  $y_t > \mu \Rightarrow E(y_{t+1} | y_t) < y_t$ . (Be sure to consider the conditionality in the expectation because if  $y$  is not white noise,  $E(y_{t+1} | y_t) \neq \mu$ .)
2. Argue that  $E(y_{t+1} | y_t) < y_t \Rightarrow E(y_{t+1} - y_t | y_t) = E(\Delta y_{t+1} | y_t) < 0$ .
3. Based on your answers to the previous questions, explain the intuition of the Dickey-Fuller test.