Tutorial/Recitation 9: Solutions

1. Problem 7.1, page 380 in textbook. See online solutions.

2. (a) Recurrent: 1, 2, 4, 5, 6; Transient: 3; Periodic: 4,5,6.
   (b) $0.2^n$
   (c) This is a geometric random variable with parameter $p = 0.5 + 0.3$. Hence, the expected number of trials up to and including the trial on which the process leaves state 3 is $E[X] = 1/p = 5/4$.
   (d) 3/8
   (e) $P(A) = 0.3 + 0.2^30.3 + 0.2^60.3 + 0.2^90.3 = 0.3024$.
   (f) $0.3/P(A) = 0.992$.
