Homework 4

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10. c. See output for .py file. Here are some values from one trial:
    i. $\mathbb{P}(X_5 = 5)$: 0.037100000000000001
    ii. $\mathbb{P}(X_6 = 5)$: 0.1149
    iii. $\mathbb{P}(X_7 = 5)$: 0.21560000000000001
    iv. $\mathbb{P}(X_8 = 5)$: 0.32579999999999998
    v. $\mathbb{P}(X_9 = 5)$: 0.42970000000000003
    vi. $\mathbb{P}(X_10 = 5)$: 0.52649999999999997

    d. By exponentiating the transition matrix, I was able to obtain some very close probabilities to my Python estimates:
    i. $\mathbb{P}(X_5 = 5)$: 0.0384
    ii. $\mathbb{P}(X_6 = 5)$: 0.1152
    iii. $\mathbb{P}(X_7 = 5)$: 0.21504
    iv. $\mathbb{P}(X_8 = 5)$: 0.32256
    v. $\mathbb{P}(X_9 = 5)$: 0.42706944
    vi. $\mathbb{P}(X_10 = 5)$: 0.5225472