Maria Kagkeli
Maria Regina Lily
Mihai Verzan

1 Degree Correlation Coefficient

For all the computations, please see `Problem 6-1.ipynb`

1.1 Degree Correlation Matrix

$$E = \begin{bmatrix} 0 & 0 & 1/8 \\ 0 & 1/4 & 1/4 \\ 1/8 & 1/4 & 0 \end{bmatrix}$$

1.2 Probabilities q_k

$$\begin{array}{rcrcrcl} q_1 & = & 0 & + & 0 & + & 1/8 = \quad 1/8 \\ q_2 & = & 0 & + & 1/4 & + & 1/4 = \quad 1/2 \\ q_3 & = & 1/8 & + & 1/4 & + & 0 = \quad 3/8 \end{array}$$

1.3 Degree Correlation Coefficient

$r = -0.7142857142857143$

Based on r, the given network is disassortative ($r < 0$)

Maria Kagkeli
Maria Regina Lily
Mihai Verzan

2 Degree Correlations in Random Graphs

Maria Kagkeli
Maria Regina Lily
Mihai Verzan

3 Degree Correlations and Assortativity