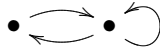


MATH 481: HOMEWORK 10

- (1) Find an $n \times n$ matrix A such that $1 \leq A(i, j) \leq n$ for all i, j , and there are no repeated entries in any row or column. Use this to find the chromatic number of $L(K_{n,n})$.
- (2) For each of the following polynomials, explain why it cannot be the chromatic polynomial of a graph.
- (a) $k^3 - 1$
 - (b) $k^5 + k^4 + k^3$
 - (c) $2k^7 - k^6$
 - (d) $k^5 - 11k^4 + 6k^3 - 5k^2$
 - (e) $k^4 - 4k^3 + 3k^2$
- (3) Consider the following digraph:



Find the number of walks of length n from one vertex to the other. Also, find the number of walks of length n from the vertex on the right to itself.