Practice worksheet | Matrix models

Reachability and dominance/ranking applications

Name: _____ Date: _____

6 questions | 19 marks

1. List reachable ordered pairs of different vertices in A→B→C. [3 marks]

2. Dominance rows are $\begin{pmatrix} 0 & 1 & 1 \\ 0 & 0 & 1 \\ 0 & 0 & 0 \end{pmatrix}$. Find direct scores and scores from $D + D^2$. [3 marks]

3. A beats B, B beats C and C beats A. Find direct scores and explain the tie. [3 marks]

4. For the same cycle, use row sums of $D + 0.5D^2$. Find all scores. [3 marks]

5. Which adjacency powers suffice to test reachability between different vertices in a five-vertex network? [3 marks]

6. Club A gets 40 votes from 100 eligible voters; B gets 30 from 50. [4 marks]

(a) Find each support percentage. [2 marks]

(b) Explain why a ranking rule must name its denominator. [2 marks]