

MAU22C00: TUTORIAL 12 PROBLEMS
GRAPH THEORY

- 1) Let (V, E) be the graph with vertices a, b, c, d, e , and f and edges $ab, ac, bc, bd, cd, de, df$, and ef .
 - (a) Does this graph have an Eulerian trail? Justify your answer.
 - (b) Does this graph have an Eulerian circuit? Justify your answer.
- 2) For what type of n does the complete graph K_n have an Eulerian circuit? Justify your answer.
- 3) For what type of n does the complete graph K_n have an Eulerian trail that is not a circuit? Justify your answer.
- 4) For what type of p and q does the complete bipartite graph $K_{p,q}$ have an Eulerian circuit? Justify your answer.
- 5) For what type of p and q does the complete bipartite graph $K_{p,q}$ have an Eulerian trail that is not a circuit? Justify your answer.
- 6) Illustrate Lemma B in lecture 36 by finding the longest circuit starting and ending at vertex G , which has no edges in common with circuit $EFGE$ in the graph with vertices A, B, C, D, E, F, G, H , and I , and edges $AI, BI, CI, HI, AB, AG, AF, BC, BG, CD, CG, DG, DE, DH, EF, EG, EH, FG$, and FH .