

Four of these problems will be graded, with each problem worth 5 points. Clear and complete justification is required for full credit. You are welcome to discuss these problems with anyone and everyone, but must write up your own final submission without reference to any sources other than the textbook and instructor.

1. Do Problem A24 from Marcus.
2. Draw the complement of the graph from Problem A24 in Marcus.
3. Draw a graph with degree sequence  $(6,5,3,3,2,1,1,1)$  or explain why no such graph exists.
4. Do Problem A48 from Marcus.
5. Do Problem B10 from Marcus.
6. Do Problem B15 from Marcus.
7. Suppose  $G$  is a bipartite graph. To what extent are the sets  $X$  and  $Y$  uniquely determined?
8. Find a 4-regular bipartite graph with 16 vertices, or show why one cannot exist.
9. Do Problem D30 from Marcus.
10. If a graph is 4-regular, what can you say about the number of vertices, and why?