

MA515 Homework #7
Due Friday, November 10

1. Consider the vertex packing problem on the graph with three vertices, 1, 2, 3, and two edges, 12, 23. Consider the independence system with E being the set of vertices of the graph, and \mathcal{I} being the collection of all vertex packings. Let P be the convex hull of the characteristic vectors of all of the vertex packings. Even though we don't have a matroid in this particular case, let Q be the polytope described by the inequalities used to define the matroid polytope (the rank inequalities and the nonnegative inequalities). Question: Does P equal Q ?
2. Exercise (Maximum-Weight Spanning Tree), p. 58.
3. Problem (Scheduling), page 59. (You may wish to look at "Exercise (Scheduling)", also on page 59, for an example.)
4. Problem (Swapping Algorithm), page 60.
5. Exercise (Dual Solution), page 69.