Approximation Algorithms

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January 23, 2014

- 1. Approximation preserving reductions.
- 2. We will not necessarily discuss the best approximations.
- 3. Vertex cover -
 - (a) Problem definition.
 - (b) Unweighted (cardinality) and weighted versions.
 - (c) The all-vertex heuristic with bounds.
 - (d) The maximum degree heuristic.
 - (e) Matchings and the maximal matching heuristic for the unweighted case.
 - (f) Tightness analysis.
- 4. Set Cover
 - (a) Problem definition.
 - (b) Relation to vertex cover.
 - (c) The maximum frequency heuristic.
 - (d) Amortized analysis for the cardinality version.
 - (e) Amortized analysis for the weighted version.
 - (f) Tightness analysis.
 - (g) The layering approach for vertex cover.