Homework #12 Key

5.26

Compute the transitive closure of all the equalities and then see if there are any contradictions. If not, the answer is satisfiable; else, not. This requires O(nm) time—each equality might have to propagate through all variables

5.28

Represent the n people as nodes in an undirected graph with edges between nodes meaning they know each other. Now, while there are nodes with degree less than 5 or degree greater than $k - 5$, where k is the current number of nodes, remove one of the offending nodes (and it's associated edges). Invite whomever is left in the graph. This is $O(n^2)$—for each node, check if it breaks a constraint, and if it does, check all previous nodes still in the graph to see if they now break a constraint.