1. Discussion of Problem Set #5

2. VCG Example

Suppose a VCG mechanism is applied to sell the objects in $\mathcal{O} = \{a; b\}$ to three buyers. A buyer can buy none, one, or both of the objects. For simplicity, assume the valuation function of each buyer depends only on the set of objects assigned to that buyer. The values are:

$$u_1(\varnothing) = 0, u_1(\{a\}) = 10, u_1(\{b\}) = 3, u_1(\{a, b\}) = 13$$
$$u_2(\varnothing) = 0, u_2(\{a\}) = 2, u_2(\{b\}) = 8, u_2(\{a, b\}) = 10$$
$$u_3(\varnothing) = 0, u_3(\{a\}) = 3, u_3(\{b\}) = 2, u_3(\{a, b\}) = 14$$

Since we do not know each buyer's lowest possible value for each product, consider an alternative VCG payment rule: each buyer i pays m_i, which is the maximum welfare of the other buyers minus the realized welfare of the other buyers, both computed using the reported valuation functions.

(a) Determine the assignment of objects to buyers and the payments of the buyers, under truthful bidding.

(b) Discuss why buyer 3 might have an objection to the outcome.