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## 1 Properties

- 1.
2. Maximize social welfare ( $\sum x_i v_i$ )
- 3.

## 2 Design Approach

Reduce mechanism design to algorithm design

**Step I:** Assume without justification, truthful bids design. (for properties 2 and 3) **Step II:** Given  $x^*$ , set  $p^*$  to achieve DSIC. (for property 1)

## 3 Myerson's Lemma

For any single parameter environment

1. An allocation rule is implementable iff it is monotonous.
2. If  $x$  is monotonous, then there exists a unique payment rule( $p$ ) such that  $(x, p)$  is DSIC.
3. The payment rule  $p$  admits an explicit formula.