More on Dominance and the Second Price Auction

a single item is to be auctioned.

value to the seller is zero.

Many buyers $i = 1, \ldots, N$

value $v_i > 0$ to buyer *i*.

each buyer submits a bid b_i

the item is sold to the highest bidder at the second highest bid suppose the bids are $b_1,\ldots b_N$

suppose that the second highest bid is $\hat{b}$ and that there are M winning bidders

then a winning bidder gets $\frac{v^i - \hat{b}}{M}$

all other players get 0

Application of Weak Dominance to Second Price Auction

the strategy of bidding $b_i = v_i$ weakly dominates all other strategies

Calculate utility. Let $\hat{b}$ be the highest bid by the other players.

	Your bid b_i		
Other bid $\hat{b}$	$v_i + x$	v_i	$v_i - x$
$\hat{b} < v_i - x$	$v^i - \hat{b} > 0$	$v^i - \hat{b} > 0$	$v^i - \hat{b} > 0$
$\hat{b} = v_i - x$	$v^i - \hat{b} > 0$	$v^i - \hat{b} > 0$	$\frac{v^i - \hat{b}}{M} > 0$
$v_i > \hat{b} > v_i - x$	$v^i - \hat{b} > 0$	$v^i - \hat{b} > 0$	0
$\hat{b} = v_i$	0	0	0
$v_i + x > \hat{b} > v_i$	$v^i - \hat{b} < 0$	0	0
$\hat{b} = v_i + x$	$\frac{v^i - \hat{b}}{M} < 0$	0	0
$v_i + x < \hat{b}$	0	0	0