Second Price Auction (English Ascending Price, vickrey auction)

(· highest bidder win

| · only winning bidder pays, good goes to the bidder with highest valuation

| · winning bidder pay the amount of the highest losing bidder

↳ dominant strategy for any bidder i to bid for valuation.

$b_i(v_i) = v_i$

△ true no matter what the distribution of valuation

⇒ discret, continuous, symmetric, asymmetric .....

△ true no matter whether opponent are rational or not

~ Disadvantages.

- could lead to disappointingly low resume ? not usually
- volunable to collusion between bidders. | but happens.

specific to SPA. (not FPA).

- can be manipulated by auctioner.

shill bids (trade off: may not sell). ⇒ FPA

full efficiency require a reserve price of c. (start with c).

Expected Revenue

in general, a seller wants to sell a reserved price = c.

↳ What is the optimal maxed price ? Expected Revenue ?

Eg. ① $v \in \{3, 6, 10\}$ (n=1, single price)

$\frac{1}{3}$ $\frac{1}{3}$ $\frac{1}{3}$ ⇐ random / probability

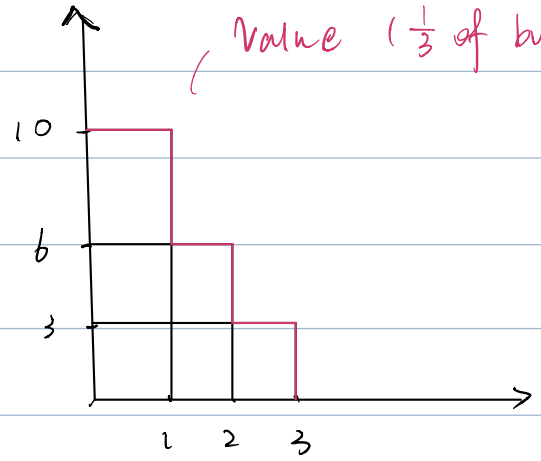
optimal reserved price $r = 3, 6, 10$. $\Rightarrow r^* = 6$, $ER = 4$.

3 ↓ $\frac{1}{3} \times 10 = \frac{10}{3}$

$\frac{2}{3} \times 6 = 4$

Similar: Monoply.

exclude buyers at marginal price.



② $n = 2$ 2 buyers

$\{3, 6, 10\}$	(likelihood) probability	no reserve (r=3)			r=6	r=10
(3, 3)	$\frac{1}{9}$	3		$\frac{43}{9}$		
(3, 6)	$\frac{2}{9}$	3	$\frac{5}{9}$		$\frac{4}{9} \times 6 = \frac{8}{3}$	$\frac{1}{9} \times 10 = \frac{10}{9}$
(3, 10)	$\frac{2}{9}$	3				
(6, 6)	$\frac{1}{9}$	6				
(6, 10)	$\frac{2}{9}$	6	$\frac{3}{9}$			
(10, 10)	$\frac{1}{9}$	10	$\frac{1}{9}$			