

# Linear Programming

1939

Kantorovich - planning

Koopmans - classic economy

large organizations  
airlines

1975 Nobel prize Economics

George Danzig: simplex

Example:

P 1/case \$1/bottle  
B 2/case \$2/bottle

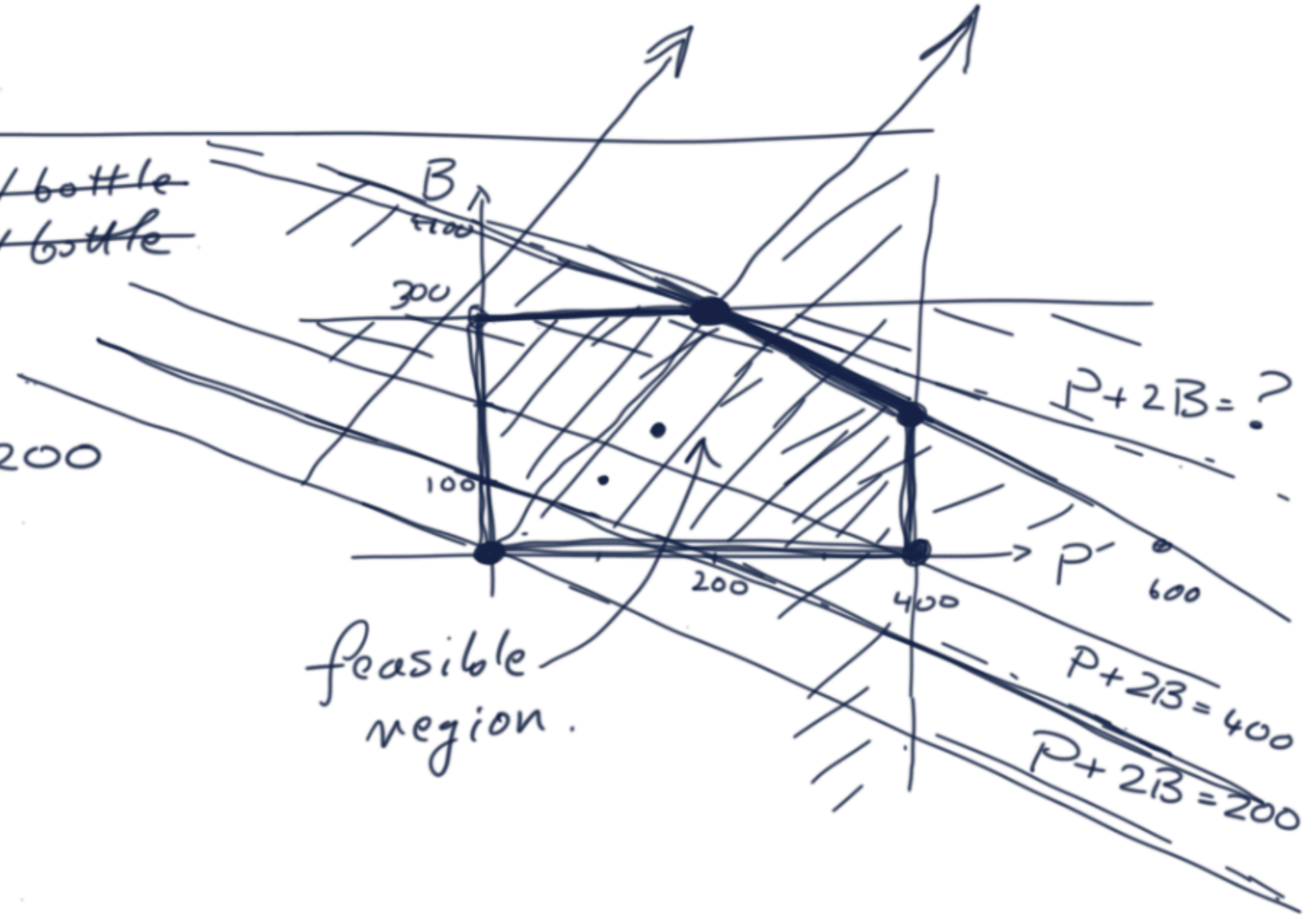
Demand:

$$P \leq 400$$

$$B \leq 300$$

$$2P + 3B \leq 1200$$

$$\max (P + 2B)$$



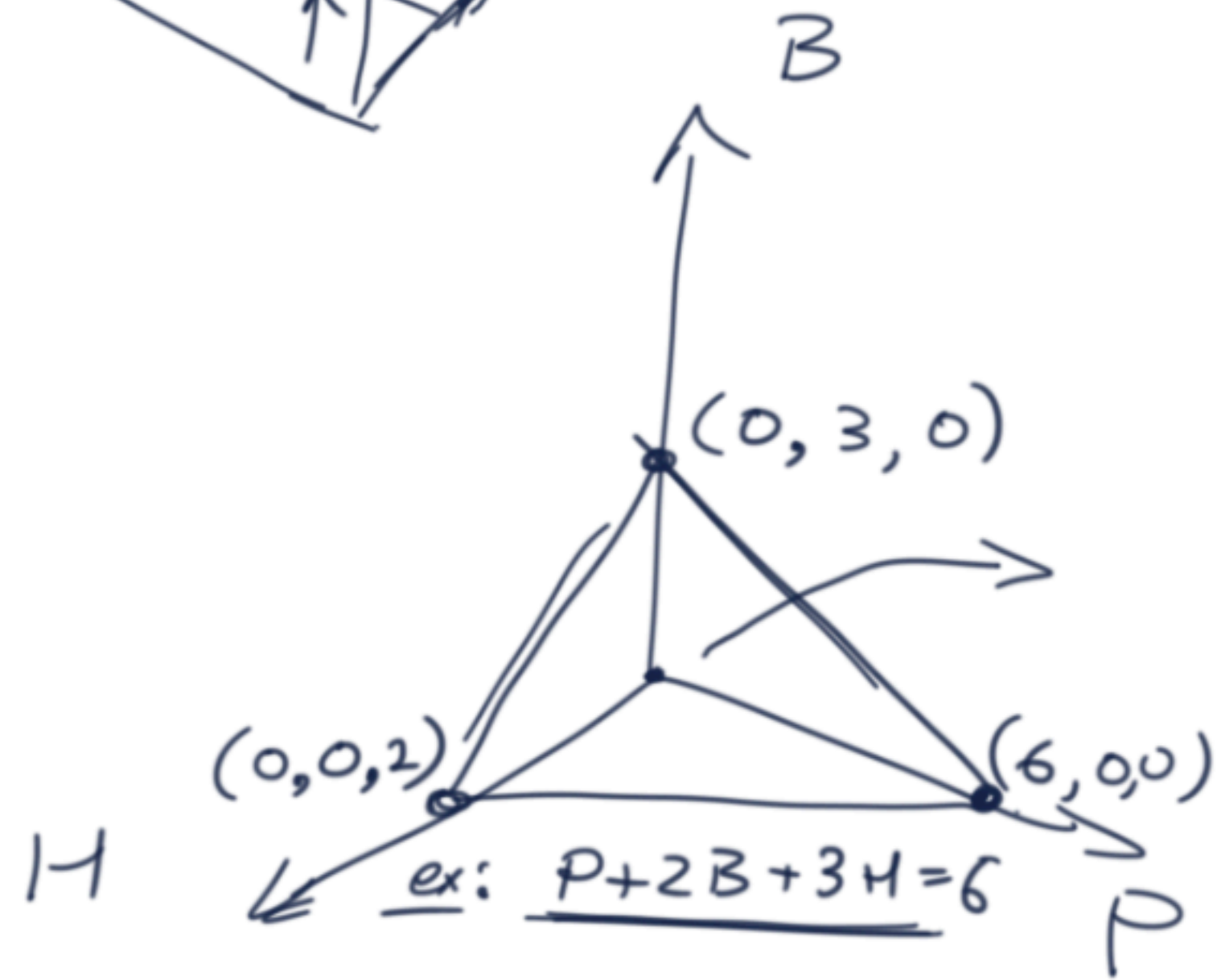
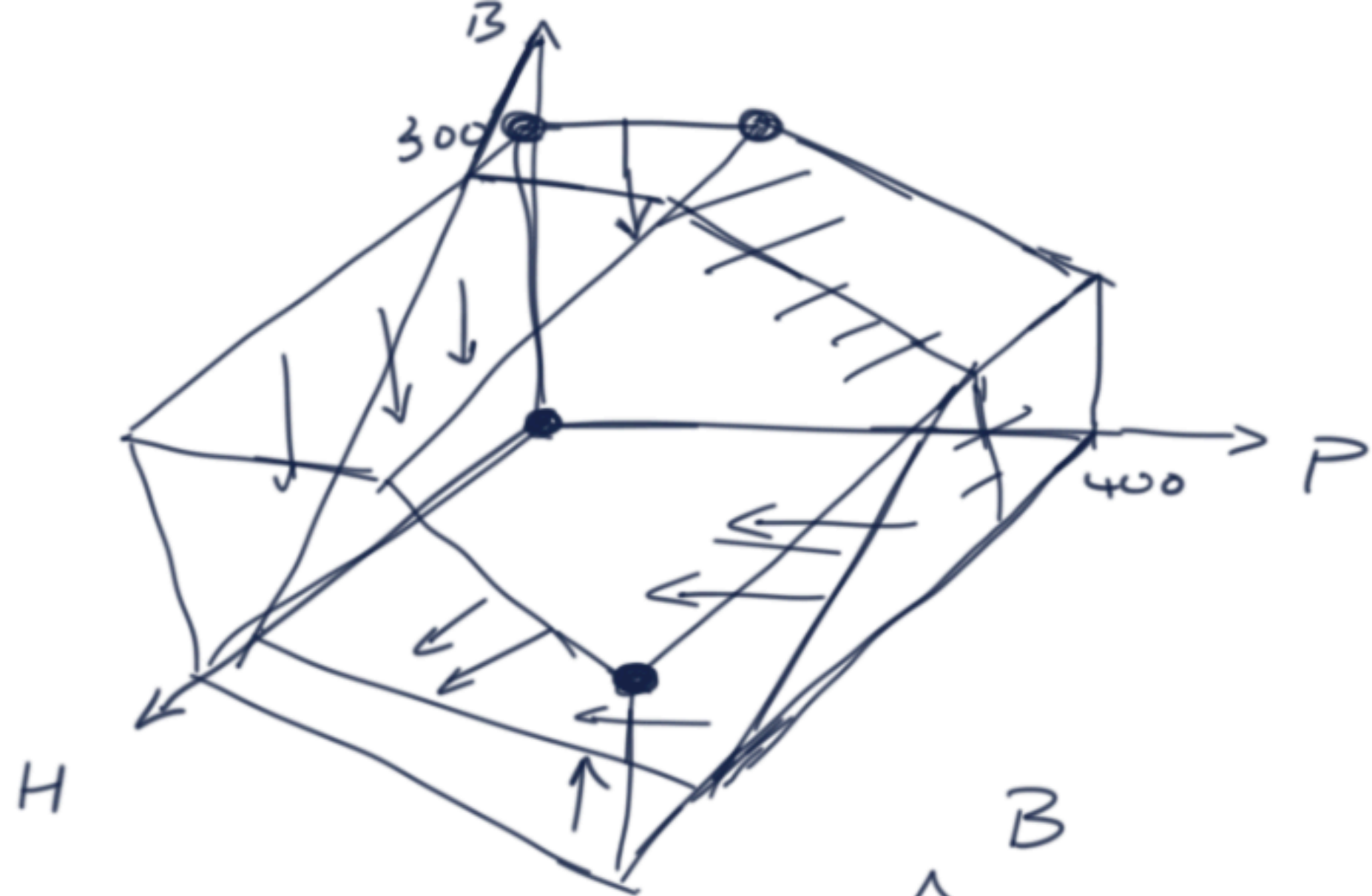
$$\max P + 2B + 3H$$

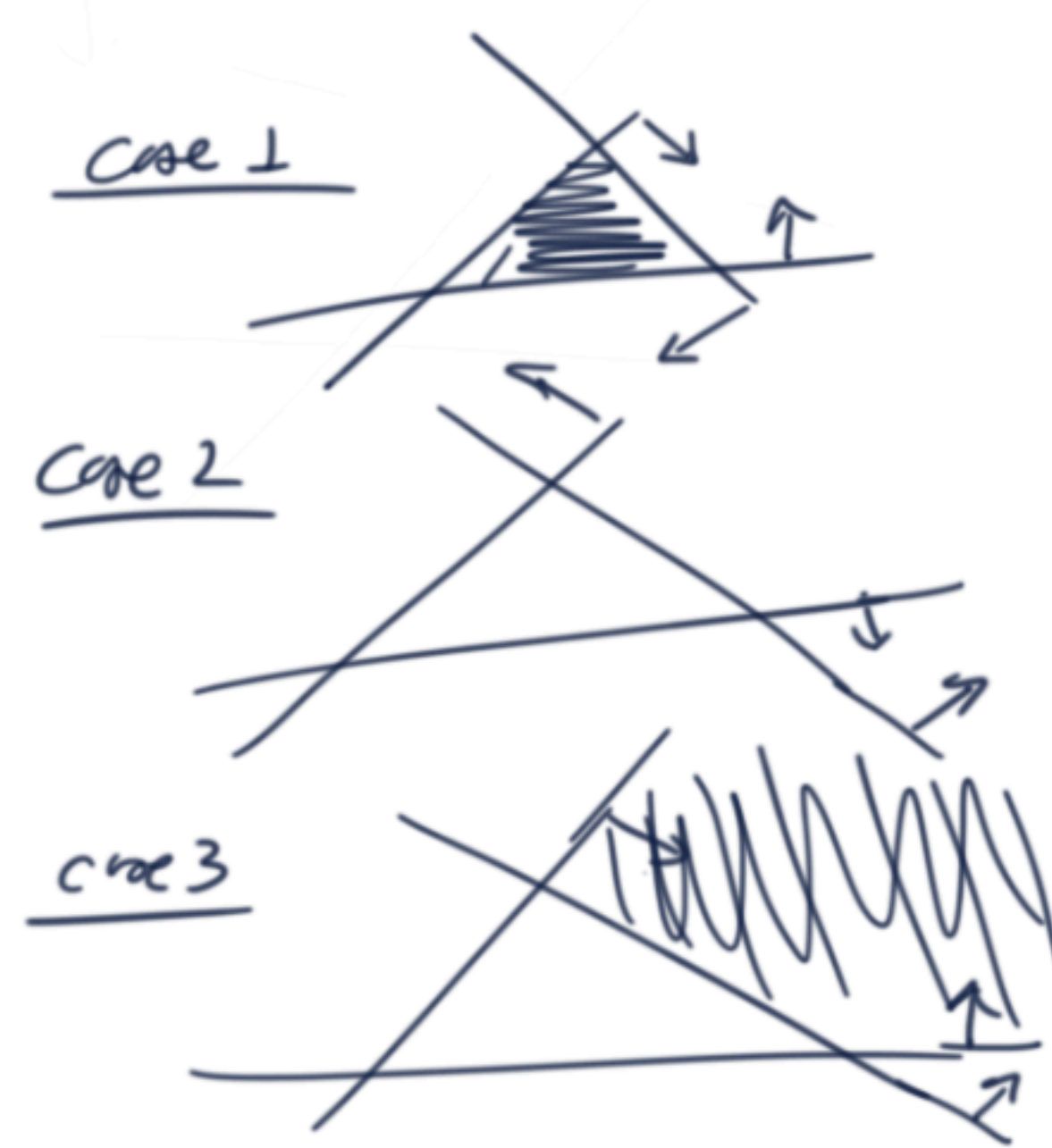
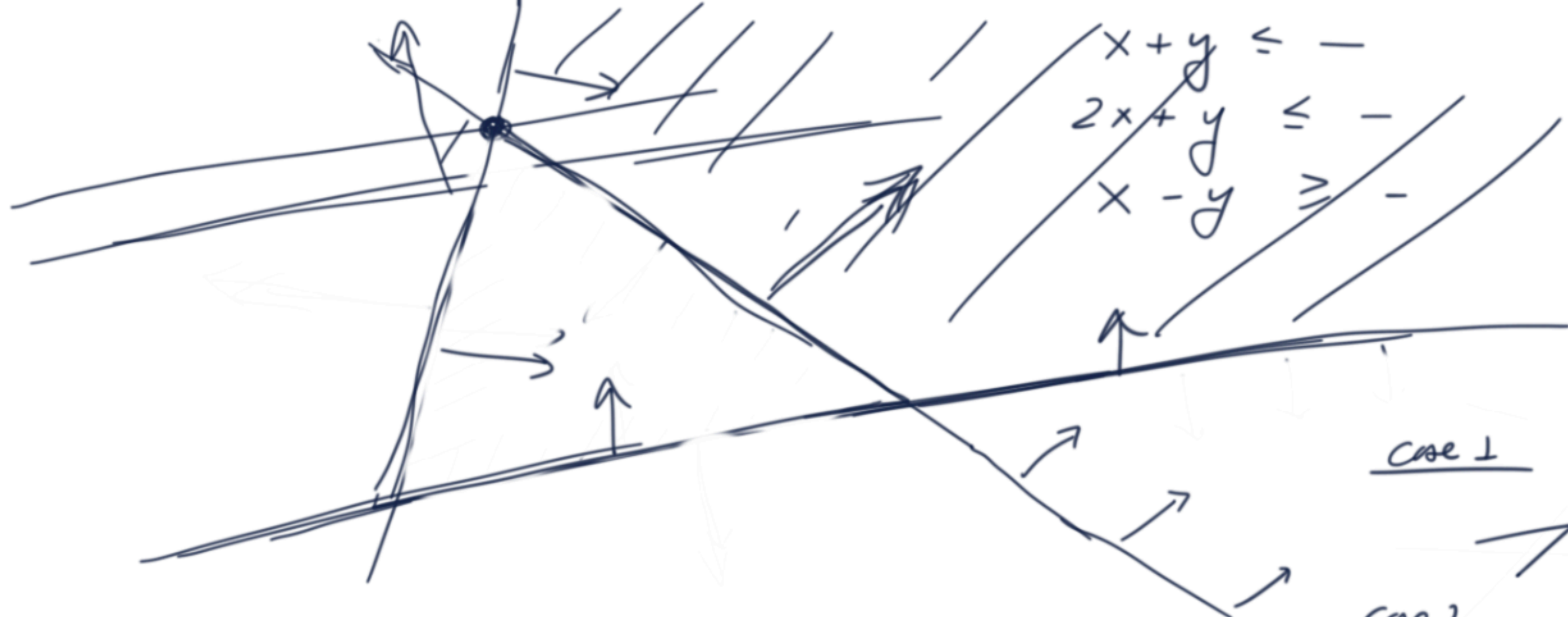
$$P \leq 400$$

$$B \leq 300$$

$$2P + 3B \leq 1200$$

$$B + 2H \leq 400$$





3 possibilities

- ✓ ✓ ① optimal solution at a vertex.
- ② No feasible region.
- ③ solution at ∞ (unbounded)