(5-2) Application of 2D linear inequalities

(5-3) linear programming (geometric)

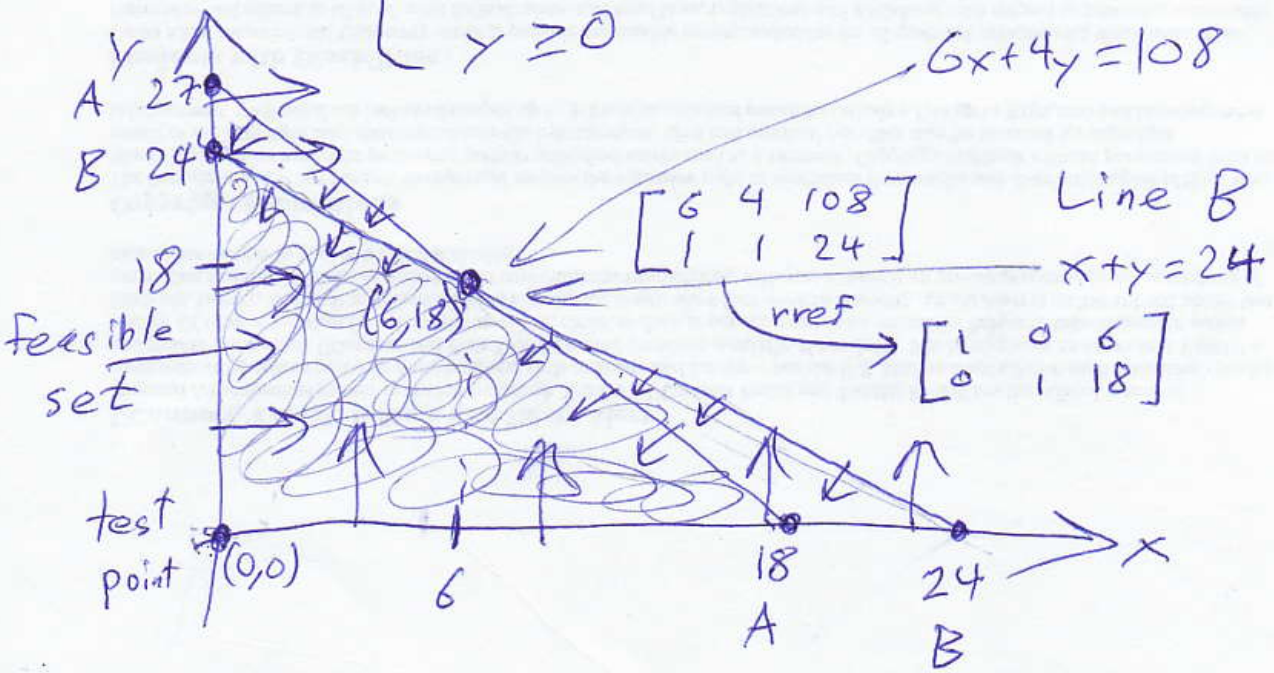
(5-2) #35

$$\begin{cases} 0 \le \text{Fab. hours} \le 108 \\ 0 \le \text{Fin. hours} \le 24 \end{cases}$$

$$\begin{cases} 0 \le 6x + 4y \le 108 \\ 0 \le x + y \le 24 \end{cases}$$

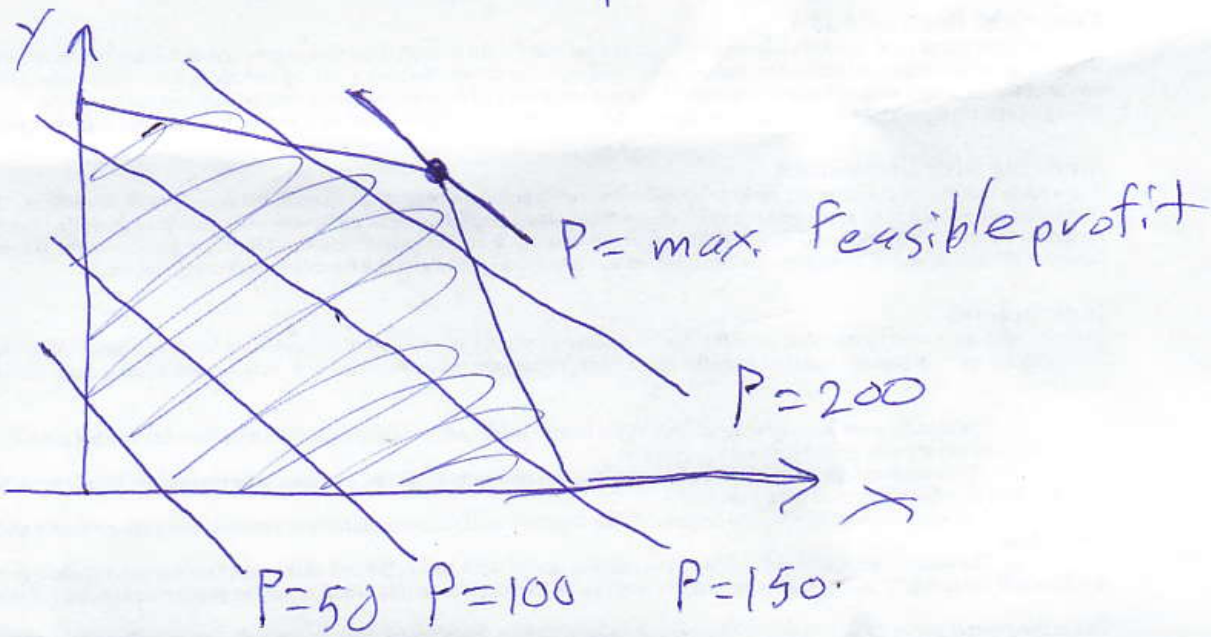
$$\begin{cases} 0 \le 6x + 4y \\ 108 \ge 6x + 4y \\ 0 \le x + y \\ 24 \ge x + y \\ 0 \le x \\ 0 \le y \end{cases} \text{ imply } \begin{cases} 0 \le 6x + 4y \\ 0 \le x + y \end{cases}$$

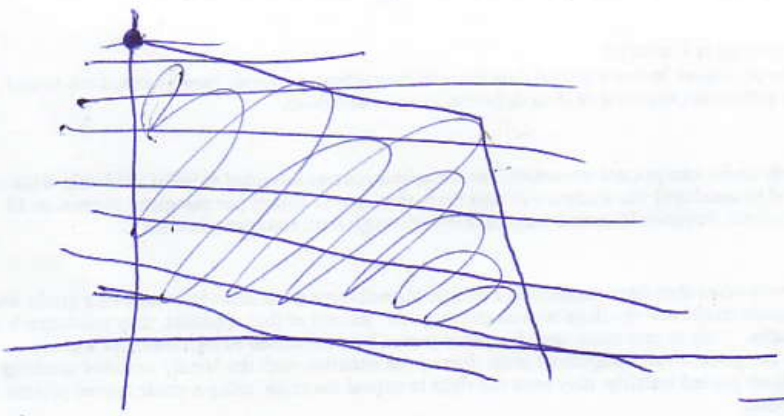
$$\begin{cases} 6x + 4y \le 108 \ (A) \\ x + y \le 24 \ (B) \\ x \ge 0 \\ y \ge 0 \end{cases}$$

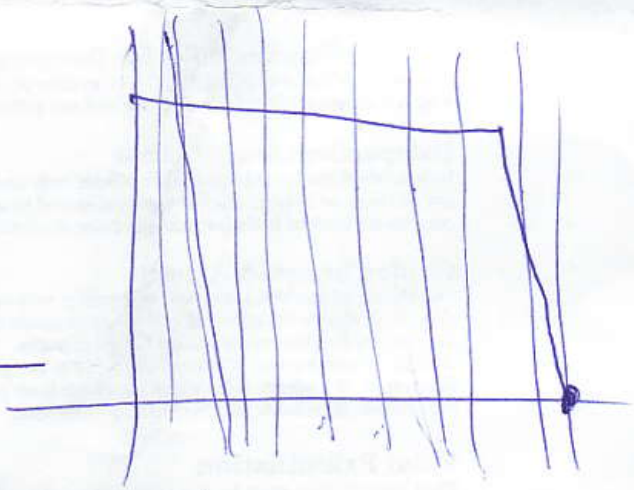


Suppose profit is given by the formula $12x + 13y$.

What point(s) in the feasible set maximize profit?







Shortcut: Compute profit at each corner. Pick the best corner.

Profit $P = 12x + 13y$

Corners:	(0,24)	(6,18)	(18,0)	(0,0)
P:	312 Best	306	216	0

HW: 5-3 #9, #12, #45