

⑤ - (a) Programme du C^{lin}

③

$$(P) \begin{cases} \text{Max } [U(y_1+2, x_2) = (y_1+2)^{1/2} + \frac{1}{2} x_2] \\ y_1 + 2x_2 \leq 6 \\ y_1 \geq 0, x_2 \geq 0 \end{cases}$$

(b) CPO

$$\begin{cases} \text{MRS} = \frac{P_1}{P_2} \\ y_1 + 2x_2 = 6 \end{cases} \iff \begin{cases} (y_1+2)^{-1/2} = \frac{1}{2} \Rightarrow (y_1+2)^{-1} = \frac{1}{4} \\ y_1 + 2x_2 = 6 \end{cases}$$

$(y_1+2) = 4$
 $\boxed{y_1 = 2}$

$\underbrace{\hspace{10em}}_{\text{on remplace}}$
 $x_2 = \frac{(6 - 2)}{2} = 2$

$$\begin{cases} y_1 = 2 \\ x_2 = 2 \end{cases}$$

\implies vérifie les contraintes donc correspond à la solution

$$y_1^* = 2 ; x_2^* = 2$$