

PRIMAL

$$\min z = 5x + 2y + 4z$$

$$3x + y + 2z \geq 4$$

$$6x + 3y + 5z \geq 10$$

$$x, y, z \geq 0$$

DUAL

$$\max z = 4u_1 + 10u_2$$

$$3u_1 + 6u_2 \leq 5$$

$$u_1 + 3u_2 \leq 2$$

$$2u_1 + 5u_2 \leq 4$$

$$u_1, u_2 \geq 0$$

ANAL PRICED

1.5aer

$$\Rightarrow \max z = 4u_1 + 10u_2$$

$$\text{max } 3u_1 + 6u_2 + u_3 = 5$$

$$u_1 + 3u_2 + u_4 = 2$$

$$2u_1 + 5u_2 + u_5 = 4$$

$$u_1, u_2 \geq 0$$

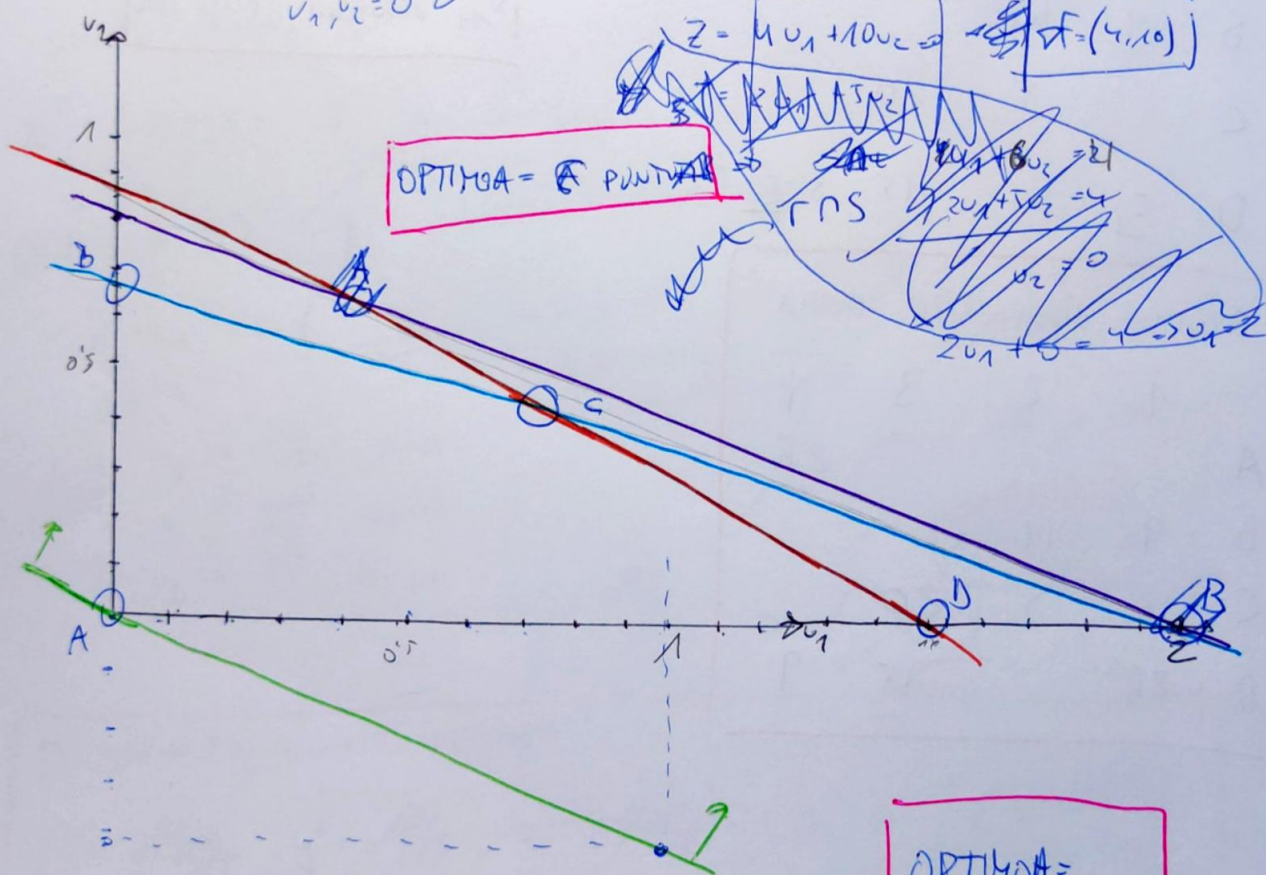
$$r: 3u_1 + 6u_2 = 5 \rightarrow u_1 = 0 \rightarrow u_2 = 5/6$$

$$s: u_1 + 3u_2 = 2 \rightarrow u_1 = 0 \rightarrow u_2 = 2/3$$

$$t: 2u_1 + 5u_2 = 4 \rightarrow u_2 = 0 \rightarrow u_1 = 2$$

$$z = 4u_1 + 10u_2 \Rightarrow \text{Optimal } z = (4, 10)$$

OPTIMUM = A POINT



OPTIMUM = C (1, 1/3)

$$r: 3u_1 + 6u_2 = 5$$

$$s: u_1 + 3u_2 = 2$$

$$1 + 3u_2 = 2 \Rightarrow u_2 = \frac{1}{3}$$

$$3u_1 + 6u_2 = 5$$

$$2u_1 + 6u_2 = 4$$

$$u_1 = 1 \Rightarrow u_1 = 1$$

SOLUTIOH LORTUHO:

OPTIMON:  $U_1^* = 1, U_2^* = 1/3, z = 22/3$

lasaiera aldagaiak sartuz

MAX  $z = 4U_1 + 10U_2$   
 non  $3U_1 + 6U_2 + U_3 = 5 \Rightarrow 3 + 2 + U_3 = 5 \Rightarrow U_3 = 0$   
 $U_1 + 3U_2 + U_4 = 2 \Rightarrow 1 + 1 + U_4 = 2 \Rightarrow U_4 = 0$   
 $2U_1 + 5U_2 + U_5 = 4 \Rightarrow 2 + 5/3 + U_5 = 4 \Rightarrow U_5 = 1/3$

SOLUTIO JOKA:

$U_1^* = 1, U_2^* = 1/3, U_3^* = 0, U_4^* = 0, U_5^* = 1/3, z = 22/3$

SOLUTIO PRIMERA:

$X^T = (x, y, z)$   
 $(x')^T = (q_1, q_2)$   
 $U^T = (U_1, U_2)$   
 $(U')^T = (U_3, U_4, U_5)$

$$\begin{cases} x \cdot U_3 = 0 \\ y \cdot U_4 = 0 \\ z \cdot U_5 = 0 \\ q_1 \cdot U_1 = 0 \\ q_2 \cdot U_2 = 0 \end{cases} \Rightarrow \begin{cases} -3x - y = 4 \\ -6x - 3y = 10 \end{cases} \Rightarrow \begin{cases} -6x - 2y = 8 \\ -6x - 3y = 10 \end{cases}$$

$$\begin{aligned} & \rightarrow y = -2 \\ & \rightarrow x = -2/3 \end{aligned}$$

$$\begin{aligned} & z = 0 \\ & q_1 = 0 \\ & q_2 = 0 \end{aligned}$$

PRIMACAREN SOLUTIO OPTIMON:

$x^* = -2/3, y^* = -2, z^* = 0, q_1^* = 0, q_2^* = 0, z^* = 22/3$