

Prob. 7.3 (DSM)

$$z = 1000x_1 + 1100x_2 \rightarrow \min$$

$$2x_1 + 4x_2 \geq 3$$

$$5x_1 + x_2 \geq 2$$

$$x_1 \geq 0, x_2 \geq 0$$

analysis z: $z - 1000x_1 - 1100x_2 = 0$ (min)
 $\Rightarrow$ minis power't DSM

SLN $\rightarrow$ SLR

$$2x_1 + 4x_2 - x_1' = 3 \quad | \cdot (-1)$$

$$5x_1 + x_2 - x_2' = 2 \quad | \cdot (-1)$$

$$z - 1000x_1 - 1100x_2 = 0 \text{ (min)}$$

$$x_{1/2} \geq 0, x_{1/2}' \geq 0$$

$$-2x_1 - 4x_2 + x_1' = -3$$

$$-5x_1 - x_2 + x_2' = -2$$

$$z - 1000x_1 - 1100x_2 = 0 \text{ (min)}$$

$$x_{1/2} \geq 0, x_{1/2}' \geq 0$$

} KT $\Rightarrow$ Lab. no DSM

P.F.	x_1	x_2	x_1'	x_2'	b_i
x_1'	-2	<u>-4</u>	1	0	<u>-3</u>
x_2'	-5	-1	0	1	-2
z	-1000	<u>-1100</u>	0	0	0
x_2	$1/2$	1	$-1/4$	0	$3/4$
x_2'	<u>$-9/2$</u>	0	$-1/4$	1	<u>$-5/4$</u>
z	<u>-450</u>	0	-275	0	825
x_2	0	1	$-5/18$	$1/9$	$11/18$
x_1	1	0	$1/18$	$-2/9$	$5/18$
z	0	0	-250	-100	950

min

min

MIN

$$\tilde{A}1: (-4)$$

$$\tilde{A}2 + \tilde{A}1'$$

$$\tilde{A}3 + 1100\tilde{A}1'$$

$$\tilde{A}1 - \frac{1}{2}\tilde{A}2'$$

$$\tilde{A}2 \cdot (-\frac{2}{9})$$

$$\tilde{A}3 + 450 \cdot \tilde{A}2'$$

$$\vec{x} = (0, 0, -3, -2) \text{ PN}$$

$$\vec{u} = (0, 0, 1000, 1100) \text{ DP}$$

$$\min \left\{ \left| \frac{-1000}{-2} \right|, \left| \frac{-1100}{-4} \right| \right\} = \frac{1100}{4}$$

$$\vec{x} = (0, \frac{3}{4}, 0, -\frac{5}{4}) \text{ PN}$$

$$\vec{u} = (275, 0, 450, 0) \text{ DP}$$

$$\min \left\{ \left| \frac{-450}{-9/2} \right|, \left| \frac{-275}{-1/4} \right| \right\} = \frac{450}{9/2}$$

$$\vec{x}_{\text{opt}} = (\frac{5}{18}, \frac{1}{18}, 0, 0) \text{ PP}$$

$$\vec{u}_{\text{opt}} = (250, 100, 0, 0) \text{ DP}$$

$$z_{\min} = 950 = f_{\max}$$