

$$Z_{\min} = 40X_1 + 20X_2$$

dengan kendala :

$$3X_1 + X_2 \geq 27$$

$$X_1 + X_2 \geq 21$$

$$X_1 + 2X_2 \geq 30$$

$$X_1, X_2 \geq 0$$

Ukai fungsi tujuan :

$$3X_1 + X_2 - S_1 + A_1 = 27 \rightarrow A_1 = 27 - 3X_1 - X_2 + S_1$$

$$X_1 + X_2 - S_2 + A_2 = 21 \rightarrow A_2 = 21 - X_1 - X_2 + S_2$$

$$X_1 + 2X_2 - S_3 + A_3 = 30 \rightarrow A_3 = 30 - X_1 - 2X_2 + S_3$$

Sehingga A_1, A_2, A_3 ke fungsi Z :

$$Z = 40X_1 + 20X_2 + MA_1 + MA_2 + MA_3$$

$$\text{bukan } -S_1, S_2, S_3:$$

$$Z - 40X_1 - 20X_2 + MA_1 - MA_2 - MA_3 = 0$$

$$Z - 40X_1 - 20X_2 - MA_1 - MA_2 - MA_3 = 0$$

$$Z - 40X_1 - 20X_2 - M(27 - 3X_1 - X_2 + S_1)$$

$$-M(21 - X_1 - X_2 + S_2)$$

$$-M(30 - X_1 - 2X_2 + S_3) = 0$$

$$Z - 40X_1 - 20X_2 - 27M + 3MX_1 + MX_2 - MS_1$$

$$-21M + MX_1 + MX_2 - MS_2$$

$$-30M + MX_1 + 2MX_2 - MS_3 = 0$$

$$Z - 40X_1 + 3MX_1 + MX_1 + MX_1$$

$$-20X_2 + MX_2 + MX_2 + 2MX_2$$

$$-MS_1 - MS_2 - MS_3 - 27M - 21M - 30M = 0$$

$$Z - (40 - 3M - 2M)X_1 - (20 - 4M)X_2$$

$$-MS_1 - MS_2 - MS_3 - 78M = 0$$

$$Z - (40 - 5M)X_1 - (20 - 4M)X_2 - MS_1 - MS_2 - MS_3 = 78M$$

Bersamaan fungsi tujuan yang baru dan fungsi kendala yg telah diubah, dipindah:

	X_1	X_2							
Z	0	$-\frac{40}{5} + \frac{5}{3}M$	$-\frac{20}{5} + \frac{4}{3}M$	-M	-M	-M	0	0	$360 + 33M$
X_1	1	$\frac{1}{3}$	$-\frac{1}{3}$	0	0	$\frac{1}{3}$	0	0	27
X_2	0	$\frac{2}{3}$	$\frac{1}{3}$	-1	0	$-\frac{1}{3}$	0	0	18
A_3	0	$\frac{5}{3}$	$\frac{1}{3}$	0	1	$-\frac{1}{3}$	0	1	21

Baris 1: Tentukan kolom basis, dan angka baris
 • Ukur masing-masing baris dengan angka basis baru
 • $\frac{27}{\frac{1}{3}} = 81$
 • $\frac{18}{\frac{2}{3}} = 27$
 • $\frac{21}{\frac{5}{3}} = 12.6$

$$Z - (40 - 5M)X_1 - (20 - 4M)X_2 - MS_1 - MS_2 - MS_3 = 78M$$

$$A_1 \quad \begin{array}{cccccccc} 1 & \frac{1}{3} & -\frac{1}{3} & 0 & 0 & \frac{1}{3} & 0 & 0 \\ \hline 0 & -\frac{20}{3} + \frac{5}{3}M & -\frac{10}{3} + \frac{4}{3}M & -M & -M & -M & 0 & 0 \end{array} \quad \times (40 - 5M)$$

$$\downarrow$$

$$-\frac{40}{3} + \frac{5}{3}M$$

$$Z - 40X_1 - 20X_2 - MA_1 - MA_2 - MA_3 = 0$$

$$Z - 40X_1 - 20X_2 - M(27 - 3X_1 - X_2 + S_1) \\ - M(21 - X_1 - X_2 + S_2) \\ - M(30 - X_1 - 2X_2 + S_3) = 0$$

$$Z - 40X_1 - 20X_2 - 27M + 3MX_1 + MX_2 - MS_1 \\ - 21M + MX_1 + MX_2 - MS_2 \\ - 30M + MX_1 + 2MX_2 - MS_3 = 0$$

$$Z - 40X_1 + 3MX_1 + MX_1 + MX_1 \\ - 20X_2 + MX_2 + MX_2 + 2MX_2 \\ - MS_1 - MS_2 - MS_3 - 27M - 21M - 30M = 0$$