



Program Linear



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Formula Umum PL

- Memaksimumkan atau meminimumkan:

$$f(x_j) = \sum_{j=1}^n c_j x_j$$

- Terhadap kendala:

$$\sum_{j=1}^n a_{ij} x_j (\leq, =, \geq) b_i, \forall i, i = 1, 2, \dots, m$$

$$x_j \geq 0, \forall j, j = 1, 2, \dots, n$$

Formula Umum PL

- Memaksimalkan atau meminimumkan:

$$f(\bar{x}) = \bar{c}^T \bar{x}$$

- Terhadap kendala: $A\bar{x} (\leq, =, \geq) \bar{b}$

$$\bar{x} \geq 0$$

- dengan,

$$\bar{x} = \begin{bmatrix} x_1 \\ x_2 \\ \vdots \\ x_n \end{bmatrix} \quad A = \begin{bmatrix} a_{11} & a_{12} & \dots & a_{1n} \\ a_{21} & a_{22} & \dots & a_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ a_{m1} & a_{m2} & \dots & a_{mn} \end{bmatrix} \quad \bar{b} = \begin{bmatrix} b_1 \\ b_2 \\ \vdots \\ b_m \end{bmatrix} \quad \bar{c}^T = [c_1 \quad c_2 \quad \dots \quad c_n]$$

Contoh

- 1. To feed her stock a farmer can purchase two kinds of feed. The farmer has determined that the herd requires 60, 84, and 72 units of the nutritional elements A, B, and C, respectively, per day. The contents and cost of a pound of each of the two feeds are given in the following table. The farmer wants to determine the least expensive way of providing an adequate diet by combining the two feeds.

Latihan

- 2. (Caterer Problem) Untuk melayani konferensi selama 3 hari harus disediakan serbet makan. Untuk hari ke-1, 2, 3 berturut-turut diperlukan 40, 70, 60 helai serbet makan. Harga beli yang baru Rp. 200 per helai, ongkos mencucikan kilat (semalam siap) Rp. 150 per helai, ongkos cuci biasa (sehari semalam siap) Rp. 80 per helai. Untuk meminimalkan ongkos total, berapa helai serbet harus dibeli, berapa bekas hari ke-1 harus dicuci kilat dan dicuci biasa, dan berapa bekas hari ke-2 harus dicuci kilat? Rumuskan masalah diatas.

Latihan

- 1. A firm wants to market bags of lawn fertilizer that contain 23% nitrogen, 7% phosphoric acid, and 7% soluble potash. Chemicals A, B, C, D, and E are available and can be combined for the product. The contents in pounds and cost in dollars of 100 lb of each are:

	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>
<i>Nitrogen</i>	18	28	0	30	16
<i>Phosphoric Acid</i>	12	5	6	7	3
<i>Potash</i>	0	5	18	8	2
<i>Cost</i>	10	23	10	30	15

- How much of each chemical should be used to minimize costs?

Latihan

- 2. Blackstone Woodworkers has signed a contract with Lowe's Depot. They are committed to delivering 50 gazebos and 100 sheds next month for sales this spring. The manufacturing requirements and cost for a unit of each, along with the amount of each resource available next month, are as follows:

	<i>Manufacturing Requirements</i>			<i>Cost (\$)</i>
	<i>Wood (units)</i>	<i>Construction Time (hr)</i>	<i>Finishing time (hr)</i>	
<i>Gazebo</i>	13	5	8	440
<i>Shed</i>	20	3	4	275
<i>Supply</i>	2400 units	500 hours	900 hours	



TERIMA KASIH

