

习 题 3

1-7 用两阶段法求解下列线性规划:

$$(1) \min S = x_1 - x_2 + x_3$$

$$\text{s. t. } \begin{cases} x_1 + 2x_2 + 3x_3 = 6 \\ 4x_1 + 5x_2 - 6x_3 = 6 \\ x_1 \geq 0, x_2 \geq 0, x_3 \geq 0 \end{cases}$$

$$(3) \min S = 4x_1 + 5x_2 + 6x_3$$

$$\text{s. t. } \begin{cases} x_1 + x_2 + x_3 = 5 \\ -6x_1 + 10x_2 + 5x_3 \leq 20 \\ 5x_1 - 3x_2 + x_3 \geq 15 \\ x_1 \geq 0, x_2 \geq 0, x_3 \geq 0 \end{cases}$$

2-1 写出下列线性规划问题的对偶问题:

$$(1) \min S = 5x_1 + 3x_2$$

$$\text{s. t. } \begin{cases} 2x_1 - x_2 + 4x_3 \leq 4 \\ x_1 + x_2 + 2x_3 \leq 5 \\ 2x_1 - x_2 + x_3 \geq 1 \\ x_1 \geq 0, x_2 \geq 0, x_3 \geq 0 \end{cases}$$

$$(3) \min S = 2x_1 + x_2 + 4x_3$$

$$\text{s. t. } \begin{cases} x_1 + 2x_2 + 2x_3 \geq 3 \\ 2x_1 + x_2 + 3x_3 \geq 5 \\ x_1 \geq 0, x_2 \geq 0, x_3 \text{ 自由} \end{cases}$$

$$(2) \max S = 4x_1 + 7x_2 + 2x_3$$

$$\text{s. t. } \begin{cases} x_1 + 2x_2 + x_3 \leq 10 \\ 2x_1 + 3x_2 + 3x_3 \leq 10 \\ x_1 \geq 0, x_2 \geq 0, x_3 \geq 0 \end{cases}$$