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Maximize $z' = 3w_1 + 8w_2$ subject to the constraints

$$\begin{aligned} w_1 + 2w_2 &\leq 6 \\ 2w_1 + w_2 &\leq 6 \\ w_1 + 4w_2 &\leq 8 \\ w_1 + 9w_2 &\leq 9, \quad w_1 \geq 0, w_2 \geq 0. \end{aligned}$$
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Minimize $z' = 10w_1 - 5w_2 - 8w_3 + 15w_4 + 20w_5$ subject to the constraints

$$\begin{aligned} 4w_1 - 4w_2 - 3w_3 + 3w_4 + w_5 &\geq 2 \\ 2w_1 - 2w_2 - 5w_3 + 5w_4 + w_5 &\geq 1 \\ 5w_1 - 5w_2 - 4w_3 + 4w_4 + w_5 &\geq 3 \\ 5w_1 - 5w_2 - w_3 + w_4 + w_5 &\geq 4, \\ w_1 \geq 0, w_2 \geq 0, w_3 \geq 0, w_4 \geq 0, w_5 \text{ unrestricted} \end{aligned}$$

or equivalently

Maximize $z' = -10w_1 + 5w_2 + 8w_3 - 15w_4 + 20w_5$ subject to the constraints

$$\begin{aligned} -4w_1 + 4w_2 + 3w_3 - 3w_4 + w_5 &\leq -2 \\ -2w_1 + 2w_2 + 5w_3 - 5w_4 + w_5 &\leq -1 \\ -5w_1 + 5w_2 + 4w_3 - 4w_4 + w_5 &\leq -3 \\ -5w_1 + 5w_2 + w_3 - w_4 + w_5 &\leq -4, \\ w_1 \geq 0, w_2 \geq 0, w_3 \geq 0, w_4 \geq 0, w_5 \text{ unrestricted} \end{aligned}$$
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Maximize $z' = 12w_1 - 6w_2$ subject to the constraints

$$\begin{aligned} 4w_1 - 3w_2 &\leq 5 \\ 2w_1 - 2w_2 &\leq 2 \\ w_1 - 3w_2 &= 6, \quad w_1 \geq 0, w_2 \geq 0. \end{aligned}$$

or equivalently

Minimize $z' = -12w_1 + 6w_2$ subject to the constraints

$$\begin{aligned} -4w_1 + 3w_2 &\geq -5 \\ -2w_1 + 2w_2 &\geq -2 \\ -w_1 + 3w_2 &= -6, \quad w_1 \geq 0, w_2 \geq 0. \end{aligned}$$