

Answers to assignment 4.

$$\begin{array}{ll} \text{(a) } \min & 7y_1 + 6y_2 - 5y_3 \\ \text{s.t.} & y_1 + 3y_2 - y_3 \geq 1 \\ & -3y_1 + y_2 - 2y_3 \geq 2 \\ & 2y_2 - y_3 \geq -3 \\ & y_1, y_2 \geq 0, y_3 \leq 0. \end{array}$$

$$\begin{array}{ll} \text{(b) } \max & 6y_2 + 3y_3 \\ \text{s.t.} & 2y_1 - y_2 + 3y_3 \geq 1 \\ & 3y_1 + y_2 + y_3 \leq 1 \\ & y_1 + 2y_2 + 4y_3 = 0 \\ & y_1 + y_2 + 2y_3 \leq 0 \\ & y_1 \leq 0, y_2 \text{ free}, y_3 \geq 0. \end{array}$$

$$\begin{array}{ll} \text{(c) } \min & 4y_1 - 3y_2 + 10y_3 \\ \text{s.t.} & 2y_1 + y_2 + 3y_3 \geq 3 \\ & -y_1 - y_2 - 2y_3 \geq -5 \\ & y_1, y_2 \leq 0, y_3 \geq 0. \end{array}$$

$$\begin{array}{ll} \text{(d) } \min & x_1 + 2x_2 + 3x_3 \\ \text{s.t.} & -x_1 + 3x_2 = 5 \\ & 2x_1 - x_2 + 3x_3 \geq 6 \\ & x_3 \leq 3 \\ & x_1 \geq 0, x_2 \leq 0, x_3 \text{ free}. \end{array}$$

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