Transformation of LPs to Standard Form

Transform the following LPs to LPs in standard form.

1.

$$\begin{array}{lrcrcrcr} \text{minimize} & x_1 & - & 12x_2 & - & 2x_3 & & \\ & & & & & & & \\ \text{subject to} & 5x_1 & - & x_2 & - & 2x_3 & = & 10 \\ & 2x_1 & + & x_2 & - & 20x_3 & \geq & -30 \\ & x_2 \leq & 0 & , & 1 \leq & x_3 & \leq 4 & \end{array}$$

2.

$$\begin{array}{lrcrcrcr} \text{maximize} & 3x & - & 12y & + & 4z & & \\ & & & & & & & \\ \text{subject to} & 5x & & & - & 10z & = & 10 \\ & 2x & - & y & - & 17z & \geq & -10 \\ & x & + & y & + & z & \leq & 10 \\ & y & \leq & 0, & 1 & \leq & z & \end{array}$$

3.

$$\begin{array}{lrcrcrcrc} \text{minimize} & 4x_1 & - & 2x_2 & + & x_3 & & & \\ & -x_1 & + & 3x_2 & - & x_3 & \geq & -1 & \\ & & & 5x_2 & + & 3x_3 & = & 5 & \\ & x_1 & + & x_2 & + & x_3 & \leq & 1 & \\ & -1 & \leq & x_2, & -2 & \leq & x_3 & \leq & 2 \end{array}$$

4.

$$\begin{array}{ll} \text{maximize} & 3x_1 - 5x_2 \\ \text{subject to} & 4x_1 + 5x_2 \geq 3 \\ & 6x_1 - 6x_2 = 7 \\ & x_1 + 8x_2 \leq 20 \\ & 0 \leq x_1, x_2 \end{array}$$

5.

$$\begin{array}{ll} \text{minimize} & -8x_1 + 9x_2 + 2x_3 - 6x_4 - 5x_5 \\ \text{subject to} & 6x_1 + 6x_2 - 10x_3 + 2x_4 - 8x_5 \geq 3 \\ & 0 \leq x_1, x_2, x_3, x_4, x_5 \end{array}$$