Reformulate the problem

$$\begin{array}{lrcrcr} \text{minimize} & 2x_1 & + & 3|x_2 & - & @a@| \\ \text{subject to} & |x_1+2| & + & x_2 & \leq & 5, \end{array}$$

as a linear programming problem by replacing the argument x_k of each absolute value $|x_k|$ as the difference of two new non-negative decision variables p_k and m_k, expressing its absolute value as their sum. Then put the problem into standard form, by introducing s slack variables x_k as needed, where $k = n+1 \ldots n+s$ and n is the number of original decision variables. Please retain all constants in the cost function, so that the standard-form cost agrees with the cost in the original problem.

minimize [[input:cost]] subject to

[[input:constraint]],

[[input:variables]]$\geq \mathbf{0}$,

Let $x_1 + 2 = p_1 - m_1$ and replace $|x_1+2|$ by $p_1 + m_1$. Let $x_2 - @a@ = p_2 - m_2$, replacing $|x_2 - @a@|$ with $p_2 + m_2$. We obtain the equivalent linear programming problem

$$\begin{array}{lrcrcrcrcrcr} \text{minimize} & 2p_1 & - & 2m_1 & + & 3p_2 & + & 3m_2 & - & 4 & & \\ \text{subject to} & p_1 & + & m_1 & + & p_2 & - & m_2 & + & x_3 & = & @5-a@, \\ & [p_1, & & m_1, & & p_2, & & m_2, & & x_3] & \geq & \mathbf{0}. \end{array}$$