1. Use the two-phase method to solve the following LP problems:

(a) 
maximize \[ z = 3x_1 + 2x_2 \]
subject to \[ 2x_1 + x_2 \leq 2 \]
\[ 3x_1 + 4x_2 \geq 12 \]
\[ x_1, x_2 \geq 0. \]

(b) 
minimize \[ z = 4x_1 + x_2 \]
subject to \[ x_1 - x_2 + 2x_3 = 1 \]
\[ 3x_1 + x_2 + x_3 = 2 \]
\[ x_1, x_2, x_3 \geq 0. \]