Prob. 1
Maximize \( W = 2x_1 + x_2 - 2x_3 \), subject to
\[
\begin{align*}
-2x_1 &+ x_2 + x_3 \geq -2 \\
x_1 &- x_2 + x_3 \leq 4 \\
x_1 &+ x_2 + 2x_3 \leq 6 \\
x_1, x_2, x_3 &\geq 0.
\end{align*}
\]

Prob. 2
Suppose that you have $9000 to invest.

(a) If you invest with Riyad Bank at the nominal rate of 5% compounded quarterly, find the accumulated amount at the end of one year.

(b) Riyad bank also offers certificates on which it pays 5.5% compounded continuously. However, a minimum investment of $10,000 is required. Because you have only $9000, the bank is willing to give you a 1-year loan for the extra $1000 that you need. Interest for this loan is at an effective rate of 8%, and both principal and interest are payable at the end of the year. Determine whether or not this strategy of investment is preferable to the strategy in part (a).

Prob. 3
Solve the system
\[
\begin{align*}
x + y + 7z &= 0 \\
x - y - z &= 0 \\
2x - 3y - 6z &= 0 \\
3x + y + 13z &= 0
\end{align*}
\]