Quiz 1

Time limit: 10 minutes. No notes, books, calculators, etc. Write your solution(s) on the blank pages provided — nothing on this page itself will be graded. Write on only one side of each page and leave reasonable margins. Print your name clearly in the upper right corner of each page, including this page itself. Turn in your quiz with this page on top. Write your final solution(s) clearly and in logical order — do not turn in scratch pages. You must follow all explicit instructions and show all your reasoning. If this quiz has more than 1 problem, all problems have equal credit.

Problem:

(a) Show that the reduced echelon form of the matrix

\[
\begin{pmatrix}
1 & 1 & 1 & 4 & 0 \\
0 & 0 & 2 & 6 & -4 \\
1 & 1 & 0 & 1 & 2
\end{pmatrix}
\]

is

\[
\begin{pmatrix}
1 & 1 & 0 & 1 & 2 \\
0 & 0 & 1 & 3 & -2 \\
0 & 0 & 0 & 0 & 0
\end{pmatrix}
\]

that is, apply an appropriate sequence of row operations, clearly indicating what these row operations are.

(b) Use the result of part (a) to find the solution set of the system

\[
\begin{align*}
x_1 + x_2 + x_3 + 4x_4 &= 0 \\
2x_3 + 6x_4 &= -4 \\
x_1 + x_2 &= \quad x_4 = 2
\end{align*}
\]