Example. Consider the linear system

\[ \begin{align*}
  x_2 - x_3 &= 0 \\
  x_1 + 3x_2 + x_3 &= 1 \\
  x_1 - x_2 + 2x_3 &= 2
\end{align*} \]

(a) Form the augmented matrix \([A \mid b]\) and use elementary row operations to bring the matrix to \([U \mid c]\), where \(U\) is an upper triangular matrix.

(b) Use backward substitution to solve the system for \(x\).
Continued.