1 Assignment 2 - Solving Sets of Linear Equations - Due to December 13, 2010

1. Solve the following linear system by using *Gauss-Jordan Method*;

$$\begin{aligned} x_1 + 2x_2 + x_3 + 4x_4 &= 13 \\ 2x_1 + 4x_3 + 3x_4 &= 28 \\ 4x_1 + 2x_2 + 2x_3 + x_4 &= 20 \\ -3x_1 + x_2 + 3x_3 + 2x_4 &= 6 \end{aligned}$$

   (a) Solve by hand.

   (b) Solve by MATLAB.
   Hint: Modify the MATLAB codes (uptrbk.m and/or GEPivShow.m)).

2. Solve the following linear system by using *Gauss-Seidel Iteration*;

$$\begin{aligned} 4x - y + z &= 7 \\ -2x + y + 5z &= 15 \\ 4x - 8y + z &= -21 \end{aligned}$$

   - Start by $P_0 = (1, 2, 2)$.
   - Tabulate the iteration.
   - Compare with the *Jacobi Iteration*.

   Hint: Modify the MATLAB code for *Jacobi Iteration* (jacobi.m).