1.2 # 6

A) $\begin{bmatrix} 1 & 1 & 2 & 8 \\ -1 & -2 & 3 & 1 \\ 3 & -7 & 4 & 10 \end{bmatrix}$ ADD ① TO ②, SUB 3① FROM ③ $\begin{bmatrix} 1 & 1 & 2 & 8 \\ 0 & -1 & 5 & 9 \\ 0 & -10 & -2 & -14 \end{bmatrix}$

SUB 10② FROM ③, MULT ② BY -1 $\begin{bmatrix} 1 & 1 & 2 & 8 \\ 0 & 1 & -5 & -9 \\ 0 & 0 & -52 & -104 \end{bmatrix}$ SUB ① FROM ②, MULT ③ BY $\frac{-1}{52}$ $\begin{bmatrix} 1 & 0 & 7 & 17 \\ 0 & 1 & -5 & -9 \\ 0 & 0 & 1 & 2 \end{bmatrix}$

SUB 7③ FROM ①, ADD 5③ TO ② $\begin{bmatrix} 1 & 0 & 0 & 3 \\ 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 2 \end{bmatrix}$ SO $x_1 = 3$, $x_2 = 1$ AND $x_3 = 2$

B) $\begin{bmatrix} 2 & 2 & 2 & 0 \\ -2 & 5 & 2 & 1 \\ 8 & 1 & 4 & -1 \end{bmatrix}$ ADD ① TO ②, SUB 4① FROM ③ $\begin{bmatrix} 2 & 2 & 2 & 0 \\ 0 & 7 & 4 & 1 \\ 0 & -7 & -4 & -1 \end{bmatrix}$

ADD ② TO ③ $\begin{bmatrix} 2 & 2 & 2 & 0 \\ 0 & 7 & 4 & 1 \\ 0 & 0 & 0 & 0 \end{bmatrix}$ MULT ① BY $\frac{1}{2}$, MULT ② BY $\frac{1}{7}$ $\begin{bmatrix} 1 & 1 & 1 & 0 \\ 0 & 1 & \frac{4}{7} & \frac{1}{7} \\ 0 & 0 & 0 & 0 \end{bmatrix}$

SUB ② FROM ① $\begin{bmatrix} 1 & 0 & \frac{3}{7} & \frac{-1}{7} \\ 0 & 1 & \frac{4}{7} & \frac{1}{7} \\ 0 & 0 & 0 & 0 \end{bmatrix}$ SO $x_3 = T$, $x_1 = -\frac{1}{7} - \frac{3}{7}T$, $x_2 = \frac{1}{7} - \frac{4}{7}T$

C) $\begin{bmatrix} 1 & -1 & 2 & -1 & -1 \\ 2 & 1 & -2 & -2 & -2 \\ -1 & 2 & -4 & 1 & 1 \\ 3 & 0 & 0 & -3 & -3 \end{bmatrix}$ SUB 2① FROM ②, ADD ① TO ②, SUB 3① FROM ④ $\begin{bmatrix} 1 & -1 & 2 & -1 & -1 \\ 0 & 3 & -6 & 0 & 0 \\ 0 & 1 & -2 & 0 & 0 \\ 0 & 3 & -6 & 0 & 0 \end{bmatrix}$

NOTE: IT MIGHT BE MORE SIMPLE TO START BY INTERCHANGING ROWS 1 AND 4.