

6. Find the general solution of the following system of linear equations:

$$x_1 + x_2 = 4$$

$$x_1 + 2x_2 = 6.$$

$$\left[\begin{array}{cc|c} 1 & 1 & 4 \\ 1 & 2 & 6 \end{array} \right] \xrightarrow{R_2 \rightarrow R_2 - R_1} \left[\begin{array}{cc|c} 1 & 1 & 4 \\ 0 & 1 & 2 \end{array} \right] \xrightarrow{R_1 \rightarrow R_1 - R_2} \left[\begin{array}{cc|c} 1 & 0 & 2 \\ 0 & 1 & 2 \end{array} \right]$$

$$\begin{cases} x_1 = 2 \\ x_2 = 2 \end{cases}$$

check $2 + 2 = 4$
 $2 + 4 = 6$

7. Find the general solution of the following system of linear equations:

$$x_1 + x_2 = 4$$

$$x_1 + 2x_2 = 6$$

$$5x_1 + 8x_2 = 26$$

$$\left[\begin{array}{cc|c} 1 & 1 & 4 \\ 1 & 2 & 6 \\ 5 & 8 & 26 \end{array} \right] \xrightarrow{\substack{R_2 \rightarrow R_2 - R_1 \\ R_3 \rightarrow R_3 - 5R_1}} \left[\begin{array}{cc|c} 1 & 1 & 4 \\ 0 & 1 & 2 \\ 0 & 3 & 6 \end{array} \right] \xrightarrow{\substack{R_3 \rightarrow R_3 - 3R_2 \\ R_1 \rightarrow R_1 - R_2}} \left[\begin{array}{cc|c} 1 & 0 & 2 \\ 0 & 1 & 2 \\ 0 & 0 & 0 \end{array} \right]$$

$$\begin{cases} x_1 = 2 \\ x_2 = 2 \end{cases}$$

check $2 + 2 = 4$
 $2 + 4 = 6$
 $10 + 16 = 26$