

8. The augmented matrix for the system is

$$\left(\begin{array}{cccc} 0 & 1 & -4 & 6 \\ 1 & 2 & -1 & 2 \\ 2 & 1 & -2 & 4 \end{array} \right)$$

Exchange rows 1 and 2.

$$\left(\begin{array}{cccc} 1 & 2 & -1 & 2 \\ 0 & 1 & -4 & 6 \\ 2 & 1 & -2 & 4 \end{array} \right)$$

Use the pivot in the first row to zero the entries below it in the first column. Add -2 times row 1 to row 3.

$$\left(\begin{array}{cccc} 1 & 2 & -1 & 2 \\ 0 & 1 & -4 & 6 \\ 0 & -3 & 0 & 0 \end{array} \right)$$

Use the pivot in the second row to zero the entries below it in the second column. Add 3 times row 2 to row 3.

$$\left(\begin{array}{cccc} 1 & 2 & -1 & 2 \\ 0 & 1 & -4 & 6 \\ 0 & 0 & -12 & 18 \end{array} \right) \quad \begin{array}{l} x_1 + 2x_2 - x_3 = 2 \\ x_2 - 4x_3 = 6 \\ -12x_3 = 18 \end{array}$$