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

$$\begin{aligned} x_1 + x_2 + x_3 &= 6 \\ x_2 + 2x_3 &= 5 \\ x_1 + 2x_2 + 3x_3 &= 10. \end{aligned}$$

$$\begin{bmatrix} 1 & 1 & 1 & | & 6 \\ 0 & 1 & 2 & | & 5 \\ 1 & 2 & 3 & | & 10 \end{bmatrix}$$

$R3 \mapsto R3 - R1$

$$\begin{bmatrix} 1 & 1 & 1 & | & 6 \\ 0 & 1 & 2 & | & 5 \\ 0 & 1 & 2 & | & 4 \end{bmatrix}$$

$R3 \rightarrow R3 - R2$

$$\begin{bmatrix} 1 & 1 & 1 & | & 6 \\ 0 & 1 & 2 & | & 5 \\ 0 & 0 & 0 & | & 1 \end{bmatrix}$$

(No solution)

0 never equals 1.