Задание 2.1

$$\begin{cases} 3x - 2y + 5z = 7 \\ 7x + 4y - 8z = 3 \\ 5x - 3y - 4z = -12 \end{cases}$$

Ответ: $x = 1$, $y = 3$, $z = 2$

Решение:

$$\left(\begin{array}{ccc|c} 3 & 2 & 5 & 7 \\ 7 & 4 & -8 & 3 \\ 5 & -3 & -4 & 12 \end{array}\right) \sim \left(\begin{array}{ccc|c} 1 & 8 & -18 & -11 \\ 3 & 2 & 5 & 7 \\ 5 & -3 & -4 & -12 \end{array}\right) \sim \left(\begin{array}{ccc|c} 1 & 8 & -18 & -11 \\ 0 & -26 & 59 & 40 \\ 5 & -3 & -4 & -12 \end{array}\right) \sim$$

$$\sim \left(\begin{array}{ccc|c} 1 & 8 & -18 & -11 \\ 0 & -26 & 59 & 40 \\ 0 & -43 & 86 & 43 \end{array}\right) \sim \left(\begin{array}{ccc|c} 1 & 8 & -18 & -11 \\ 0 & 1 & -2 & -1 \\ 0 & -26 & 59 & 40 \end{array}\right) \sim \left(\begin{array}{ccc|c} 1 & 8 & -18 & -11 \\ 0 & 1 & -2 & -1 \\ 0 & 0 & 7 & 14 \end{array}\right) \sim$$

$$\sim \left(\begin{array}{ccc|c} 1 & 8 & -18 & -11 \\ 0 & 1 & -2 & -1 \\ 0 & 0 & 1 & 2 \end{array}\right).$$

$$\Rightarrow \begin{cases} x + 8y - 18z = -11 \\ y - 2z = -1 \\ z = 2. \end{cases}$$

$\downarrow$

$$\begin{cases} x + 8y - 18z = -11 \\ y = 3 \end{cases}$$

$\downarrow$

$$x = 1$$

Все уравнения и система - линейные