

# 112-2 Linear algebra homework\_1

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## Question.1

Find a parametric representation of the solution set of the linear equation.

$$\begin{aligned} 12x_1 + 24x_2 - 36x_3 &= 12 \\ = x_1 + 2x_2 - 3x_3 &= 1 \end{aligned}$$

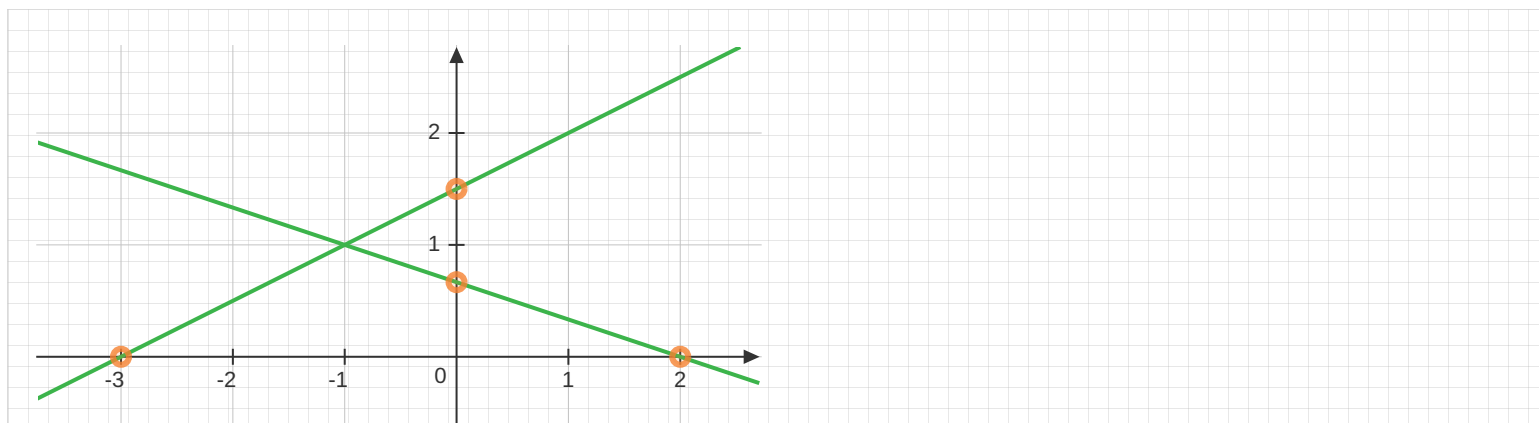
$$\begin{aligned} \text{Let } x_1 &= t, \quad x_2 = t \\ t + 2t - 3x_3 &= 1 \\ 3x_3 &= 3t - 1 \\ x_3 &= t - \frac{1}{3} \end{aligned}$$

$$\begin{cases} x_1 = t \\ x_2 = t \\ x_3 = t - \frac{1}{3} \end{cases}$$

## Question.2

Graph the system of linear equation and solve the system.

$$\begin{aligned} x + 3y &= 2 && \left(0, \frac{2}{3}\right) \text{ and } (2, 0) \\ -x + 2y &= 3 && \left(0, \frac{3}{2}\right) \text{ and } (-3, 0) \end{aligned}$$



### Question.3

Use back-substitution to solve the system.

$$5x_1 + 2x_2 + x_3 = 0$$

$$2x_1 + x_2 = 0$$

Let  $x_2 = t$ , then

$$2x_1 + t = 0$$

$$x_1 = -\frac{1}{2}t$$

$$-\frac{5}{2}t + 2t + x_3 = 0$$

$$x_3 = \frac{1}{2}t$$