

# Ecuatia de gradul I cu două necunoscute

Forma generală:  $ax + by + c = 0$

$a, b, c \in \mathbb{R}$  (coeficienți)  $a \neq 0$   
 $x, y \in \mathbb{R}$  (variabile)  $b \neq 0$   
 (nedeterminate)

Rezolvare:

$$ax + by + c = 0 \Leftrightarrow by = -ax - c \Leftrightarrow y = \frac{-ax - c}{b} \Leftrightarrow y = -\frac{ax + c}{b} \Rightarrow$$

$$S = \left\{ \left( x, -\frac{ax + c}{b} \right) \mid x \in \mathbb{R} \right\}$$

Ex:  $2x + y - 6 = 0 \Rightarrow y = -2x + 6 \Rightarrow S = \left\{ (x, -2x + 6) \mid x \in \mathbb{R} \right\}$

Interpretarea geometrică: 

x	0	-1	2
y	6	8	2

 (erau suficiente 2 valori)

$x = 0 \Rightarrow y = -2 \cdot 0 + 6 \Rightarrow y = 6$

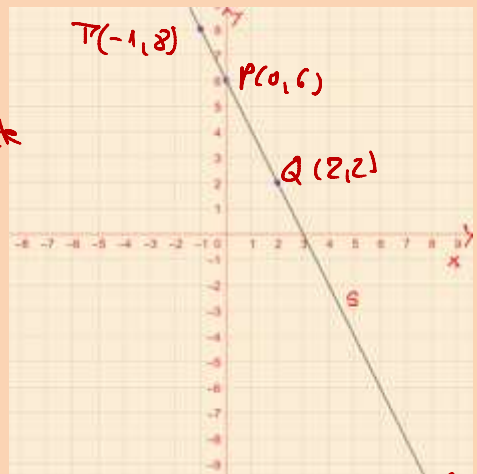
$x = -1 \Rightarrow y = -2 \cdot (-1) + 6 \Rightarrow y = 2 + 6 \Rightarrow y = 8$       $x = 2 \Rightarrow y = -2 \cdot 2 + 6 \Rightarrow y = -4 + 6 \Rightarrow y = 2$

Am reprezentat punctele într-un sistem de coordonate cartezian în plan  $Ox \perp Oy$   
 } alegem aceeași unitate de măsură

$Ox =$  axa absciselor

$Oy =$  axa ordonatelor

$T(-1, 8)$  (de coordonate -1 și 8)  
 } coordonata punctului T  
 } abscisa punctului T



$$2x - 3y - 1 = 0 \Leftrightarrow -3y = -2x + 1 \Leftrightarrow y = \frac{-2x + 1}{-3}$$

$$y = -\frac{-2x + 1}{3} \Leftrightarrow y = \frac{2x - 1}{3} \Rightarrow S = \left\{ \left( x, \frac{2x - 1}{3} \right) \mid x \in \mathbb{R} \right\}$$

Avem voie să mutăm semnul - deoarece:  
 $-8 : 4 = 8 : (-4) = (-8) : 4 = -2 \Rightarrow$   
 $-\frac{8}{4} = \frac{8}{-4} = \frac{-8}{4} = -2$

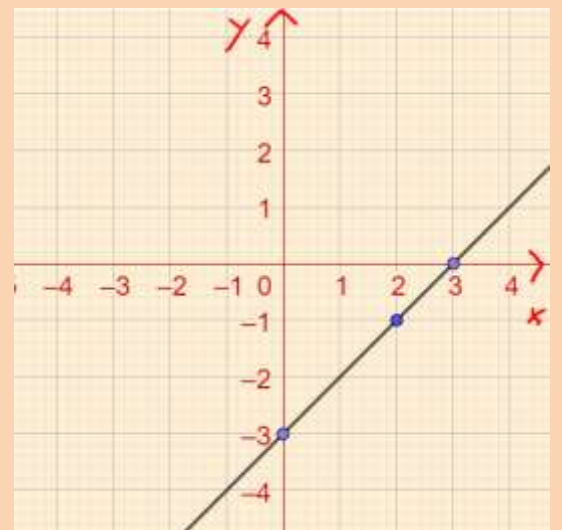
x	2	5	-1
y	1	3	-1

$x = 2 \Rightarrow y = \frac{2 \cdot 2 - 1}{3} \Rightarrow y = \frac{3}{3} \Rightarrow y = 1$

$x = 2 \Leftrightarrow$  adunăm sau scădem numitorul  $\Rightarrow x = 2 + 3$   
 $x = 5 \Rightarrow y = 3$   
 $x = 2 \Rightarrow x = 2 - 3 \Rightarrow x = -1 \Rightarrow y =$

$$-x + y + 3 = 0 \Rightarrow y = x - 3 \Rightarrow \begin{array}{c|c|c|c} x & 0 & 3 & 2 \\ \hline y & -3 & 0 & -1 \end{array}$$

$$S = \left\{ (x, x - 3) \mid x \in \mathbb{R} \right\}$$



$$5x - y - 1 = 0 \Leftrightarrow -y = -5x + 1 \cdot (-1) \Rightarrow y = 5x - 1$$

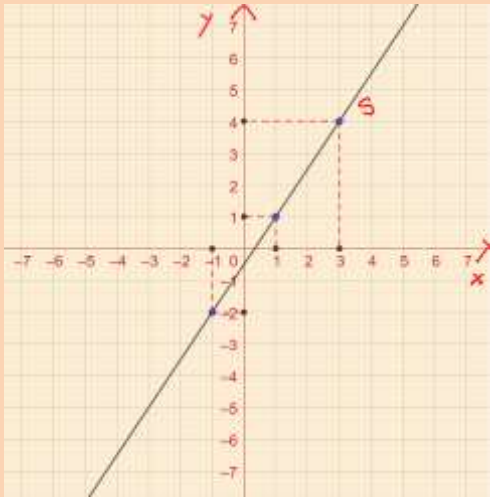
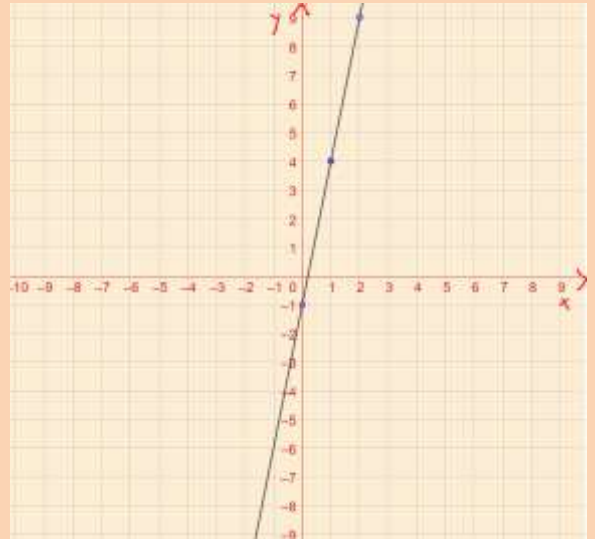
$$\begin{array}{c|c|c|c} x & 0 & 1 & 2 \\ \hline y & -1 & 4 & 9 \end{array}$$

$$S = \{(x, 5x - 1) \mid x \in \mathbb{R}\}$$

$$3x - 2y - 1 = 0 \Leftrightarrow -2y = -3x + 1 \mid \cdot (-1) \\ 2y = 3x - 1 \Rightarrow y = \frac{3x - 1}{2}$$

$$S \cup y = \frac{-3x + 1}{-2} \Rightarrow y = -\frac{-3x + 1}{2} \Rightarrow y = \frac{3x - 1}{2}$$

$$S = \{(x, \frac{3x - 1}{2}) \mid x \in \mathbb{R}\} \quad \begin{array}{c|c|c|c} x & 1 & 3 & -1 \\ \hline y & 1 & 4 & -2 \end{array}$$



$$\begin{array}{c|c|c|c} x & 1 & 6 & -4 \\ \hline y & 0 & -1 & 1 \end{array}$$

$$x = 1 - 5 = -4$$

$$y = -\frac{(-4) + 1}{5}$$

$$y = \frac{4 + 1}{5} \Rightarrow y = \frac{5}{5} \Rightarrow y = 1$$

∩

$$-x - 5y + 1 = 0 \Leftrightarrow -x + 1 = 5y \Rightarrow y = \frac{-x + 1}{5} \Rightarrow S = \{(x, \frac{-x + 1}{5}) \mid x \in \mathbb{R}\}$$

$$x - y = 0 \Rightarrow x = y \Rightarrow y = x \Rightarrow S = \{(x, x) \mid x \in \mathbb{R}\}$$

$$\begin{array}{c|c|c|c} x & 0 & 1 & 2 \\ \hline y & 0 & 1 & 2 \end{array}$$

