

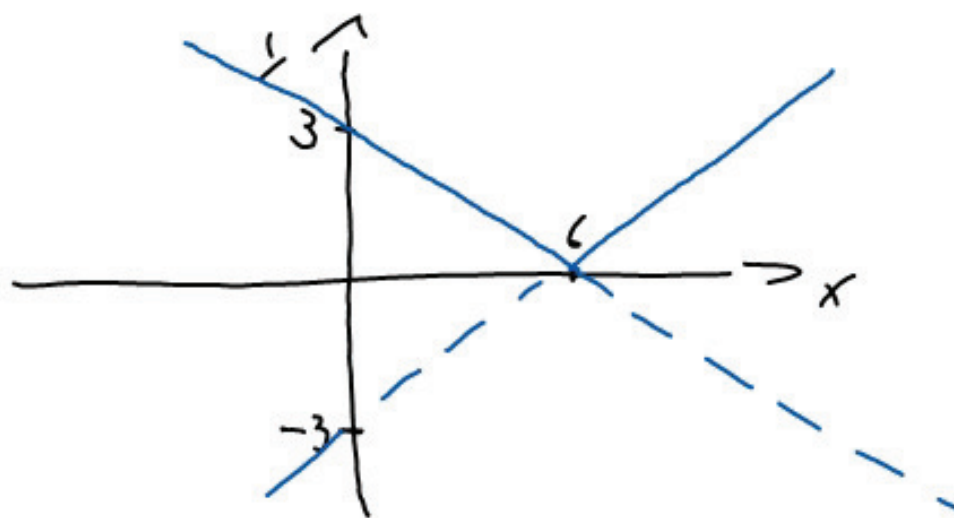
$$\log 0,4 \cdot x > 42 \quad | \cdot \log 0,4$$

$$x < 42 : \log 0,4$$

$$| \underbrace{3x - 6}_0 | \begin{cases} \xrightarrow{x > 2} \oplus & 3x - 6 \\ \xrightarrow{x = 2} \ominus & -(3x - 6) \end{cases}$$

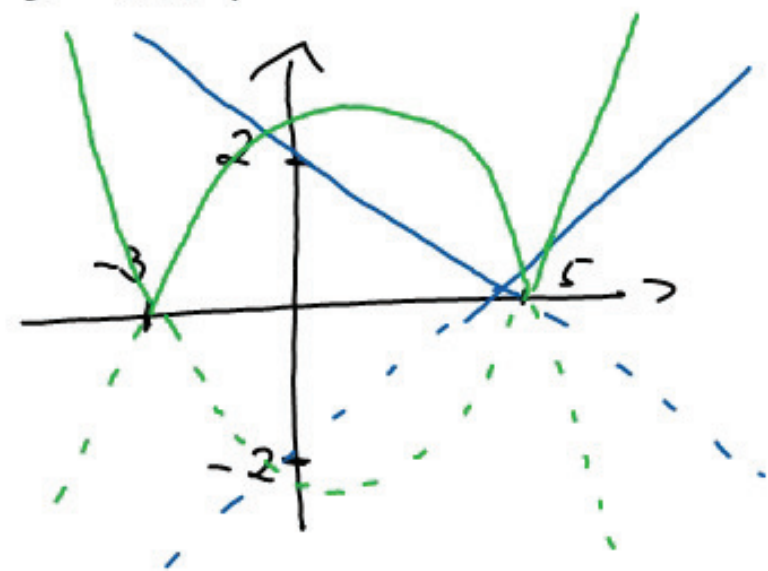
$$f(x) = \underbrace{\left| \frac{1}{2}x - 3 \right|}_g \begin{cases} x \geq 6 \rightarrow \oplus & \frac{1}{2}x - 3 \\ x < 6 \rightarrow \ominus & -\left(\frac{1}{2}x - 3\right) = -\frac{1}{2}x + 3 \end{cases}$$

$$f(x) = \left| \frac{1}{2}x - 3 \right| = \begin{cases} \frac{1}{2}x - 3 & ; x \geq 6 \\ -\frac{1}{2}x + 3 & ; x < 6 \end{cases}$$



$$1) f(x) = |2 - \frac{2}{5}x| = \begin{cases} \frac{2}{5}x - 2 & ; x \geq 5^- \\ -\frac{2}{5}x + 2 & ; x < 5^- \end{cases}$$

$$2) g(x) = |-x^2 + 2x + 15| \\ = (x^2 - 7x - 15) \\ = (x - 5)(x + 3)$$



$$g(x) = \begin{cases} -x^2 + 2x + 15 & ; x \geq -3 \wedge x \leq 5^- \\ x^2 - 2x - 15 & ; x < -3 \vee x > 5^- \end{cases}$$

$$|4 - \frac{1}{2}x| < 10$$

$\underbrace{\hspace{2cm}}_{k=8}$



F	$x \geq 8: -(4 - \frac{1}{2}x) < 10$	$x < 8: 4 - \frac{1}{2}x < 10$
R	$-4 + \frac{1}{2}x < 10$ $x < 28$	$4 - \frac{1}{2}x < 10$ $-\frac{1}{2}x < 6$ $x > -12$
E	$x \geq 8 \wedge x < 28$	$x > -12 \wedge x < 8$
P	$x=20: 4-10 =6 < 10 \checkmark$	$x=0: 4-0 =4 < 10 \checkmark$

L

$$\mathcal{L} = x \in]-12; 28[_{\mathbb{R}}$$

$$\frac{5x}{4-2x} \geq 2 \quad | \cdot (4-2x) \quad \mathbb{D} = \mathbb{R} \setminus \{2\}$$

$$5x \geq 2 \cdot (4-2x) \quad x = 4/2$$

$$5x \geq 8 - 4x$$

$$9x \geq 8$$

$$x \geq 8/9$$

	$x > 2$	$x < 2$
R	$5x \leq 2 \cdot (4-2x)$	$5x \geq 2 \cdot (4-2x)$
	$x \leq 8/9$	$x \geq 8/9$
E	$x \leq 8/9 \vee x > 2$	$x \geq 8/9 \wedge x < 2$
P	$x = 0 \quad 0 \geq 2 \quad \checkmark$	$x = 1 \quad 5 \geq 2 \quad \checkmark$
L	$L = \{x \in \mathbb{R} \mid x \geq 8/9 \wedge x < 2\}$	

$$1) \quad \frac{2x-5}{4-2x} > \frac{1}{2} \quad | \cdot (4-2x) \quad ; \quad x \in \mathbb{R} - \{2\}$$

$$\textcircled{-} \quad |x > 2|$$

$$\textcircled{+} \quad |x < 2|$$

$$2x-5 < 2-x$$

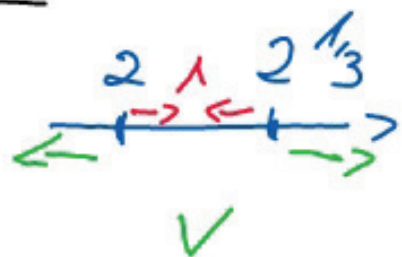
$$3x < 7$$

$$|x < \frac{7}{3}|$$

$$2x-5 > 2-x$$

$$3x > 7$$

$$|x > \frac{7}{3}|$$



$$x > 2 \wedge x < 2\frac{1}{3}$$

$$x < 2 \vee x > 2\frac{1}{3}$$

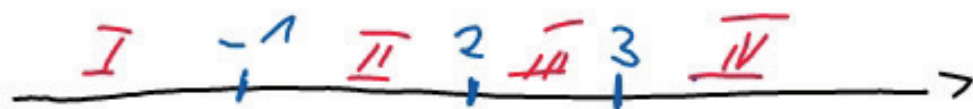
$$2,1: \quad \frac{-0,8}{-0,2} = 4 > \frac{1}{2} \quad \checkmark$$

$$x=0 \quad -\frac{5}{4} > \frac{1}{2} \quad \checkmark$$

$$\mathcal{L} = \{ x \in \mathbb{R} \mid x > 2 \wedge x < 2\frac{1}{3} \}$$

$$5) \quad x^3 - 4x^2 + x + 6 > 0$$

$$(x+1)(x-3)(x-2) > 0$$



I $x = -42$: $\ominus \cdot \ominus \cdot \ominus < 0$

II $x = 0$: $\oplus \ominus \ominus > 0$ ✓

III $x = 2,5$: $\oplus \ominus \oplus < 0$

IV $x = 4?$: $\oplus \oplus \oplus > 0$ ✓

$$\mathcal{L} = \{x \in \mathbb{R} \mid (x > -1 \wedge x < 2) \vee x > 3\}$$

Gaußsches Eliminationsverfahren

$$\left| \begin{array}{ccc|c} -x & +2y & -z & = -5 \\ x & -3y & +2z & = 8 \\ 2x & -y & +5z & = 13 \end{array} \right| \quad \text{Pivot } \begin{array}{l} 1 \rightarrow + \\ 1 \cdot 2 \rightarrow + \end{array}$$

$$\left| \begin{array}{ccc|c} -x & +2y & -z & = -5 \\ 0 & -y & +z & = 3 \\ 0 & 3y & +3z & = 3 \end{array} \right| \quad \text{Pivot } 1 \cdot 3 \rightarrow +$$

$$\left| \begin{array}{ccc|c} -x & +2y & -z & = -5 \\ 0 & -y & +z & = 3 \\ 0 & 0 & 6z & = 12 \end{array} \right| \quad \begin{array}{l} -x - 2 - 2 = -5 \quad x = 1 \\ -y + 2 = 3 \quad y = -1 \\ z = 2 \end{array}$$

$$S(1; -1; 2)$$

$$\left| \begin{array}{ccc|c} x + 3y - 2z = -2 & \text{Pivot } (1,2) & & \\ -2x - 5y + 2z = -1 & \swarrow & & \\ 3x + 2y - z = 2 & & \text{Pivot } (1,-3) & \end{array} \right|$$

$$\left| \begin{array}{ccc|c} x + 3y - 2z = -2 & & & \\ 0 \quad y - 2z = -5 & \text{Pivot } (1,7) & & \\ 0 \quad -7y + 5z = 8 & \swarrow & & \end{array} \right|$$

$$\left| \begin{array}{ccc|c} x + 3y - 2z = -2 & x + 3 - 6 = -2 & x = 1 & \\ 0 \quad y - 2z = -5 & y - 6 = -5 & y = 1 & \\ 0 \quad 0 \quad -9z = -27 & z = 3 & & \end{array} \right|$$

$$S(1, 1, 1, 3)$$