

$$4) f(x) = -2(x^2 - 6x + 9)$$

gestreckt $|-2| > 1$
 unten offen $-2 < 0$

Achsen sym.:

$$S_y: x = 3$$

$$-2[(x-3)^2 - 3^2 + 9] = -2(x-3)^2 + 0$$

\Rightarrow Scheitelpunkt $(3|0) \hat{=}$ Hochpunkt

$$S_y: x = -10$$

$$S_y = (0|-18)$$

$$\boxed{(x+a)^2 + s \rightarrow s(-a|s)}$$

$$5) g(x) = \frac{1}{2}(x^2 + 20x + 64)$$

gestreckt $|\frac{1}{2}| < 1$
 oben offen $\frac{1}{2} > 0$

$$g(x) = \frac{1}{2}[(x+10)^2 - 10^2 + 64]$$

$$g(x) = \frac{1}{2}(x+10)^2 - 18$$

$$\rightarrow S(-10|-18) \hat{=} TP$$

$$S_y = (0|32)$$

$$\frac{1}{2}(x+16)(x+4)$$

$$S_{x_1} = (-4|0); S_{x_2} = (-16|0)$$

$$7) \quad x^4 - 24x^2 - 25 = 0 \quad \left. \vphantom{x^4 - 24x^2 - 25 = 0} \right\} z = x^2$$

$$z^2 - 24z - 25 = 0$$

$$z_{1/2} = 12 \pm \sqrt{12^2 + 25} = 12 \pm \sqrt{144 + 25} \\ = 12 \pm 13$$

$$z_1 = 25 \quad \vee \quad z_2 = -1$$

$$\left. \vphantom{z_1 = 25 \vee z_2 = -1} \right\} x = \pm \sqrt{z}$$

$$x_{1/2} = \pm \sqrt{25} = \pm 5$$

$$x_{3/4} = \pm \sqrt{-1} = \pm i$$

$$\left. \vphantom{x_{1/2} = \pm \sqrt{25} = \pm 5} \right\} \mathcal{L} = \{-5; 5\}$$

$$8) \quad x^8 - 17x^4 + 16 = 0; \quad z = x^4 \quad z^2 - 17z + 16 = 0$$

$$z_1 = 16 \quad \vee \quad z_2 = 1$$

$$(z - 16)(z - 1) = 0$$

$$x = \pm \sqrt[4]{z}$$

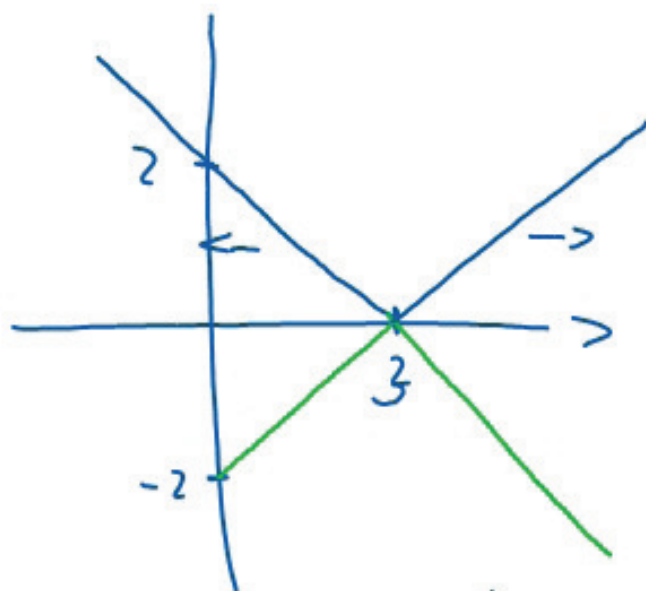
$$x_{1/2} = \pm \sqrt[4]{16} = \pm 2 \quad \vee \quad x_{3/4} = \pm \sqrt[4]{1} = \pm 1$$

$$\mathcal{L} = \{-2; -1; 1; 2\}$$

$$1) \left| \frac{2}{3}x - 2 \right| \quad ; \quad x = 3$$

$$\begin{array}{l} x \geq 3 \\ \swarrow \quad \searrow \\ \frac{2}{3}x - 2 \quad \quad \quad -(\frac{2}{3}x - 2) = -\frac{2}{3}x + 2 \end{array}$$

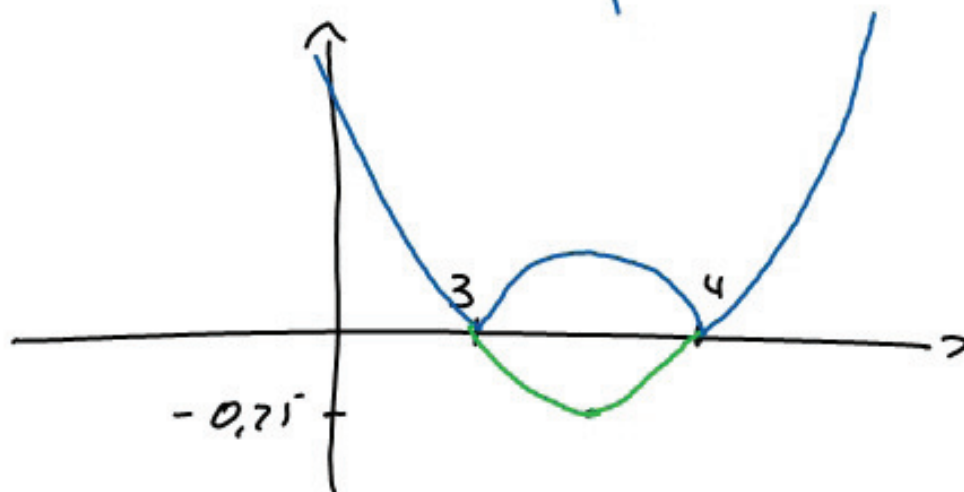
$$y = \frac{a}{s} \cdot x + c \quad \begin{array}{l} a \updownarrow \\ s \leftrightarrow \end{array}$$



$$2) \left| x^2 - 7x + 12 \right|$$

$$(x-3)(x-4)$$

$$S(3,5 \mid -0,25)$$



$$|3-x| < 2 \quad x=3$$

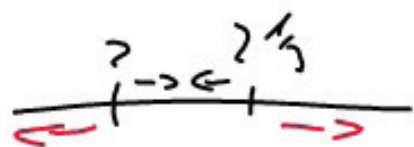
$x \geq 3 \quad -(3-x) < 2$ $-3+x < 2$ $x < 5$	$x < 3 \quad 3-x < 2$ $-x < -1$ $x > 1$	F
$x \geq 3 \wedge x < 5$ \uparrow	$x < 3 \wedge x > 1$	F
$x=4 \quad 3-4 < 2$ $ 1-1 = 1 < 2 \quad \checkmark$	$x=2 \quad 3-2 = 1 < 2 \quad \checkmark$	P



$$U = \{x \in \mathbb{R} \mid x > 1 \wedge x < 5\} \quad L$$

$$1) \frac{2x-5}{4-7x} > \frac{1}{2} \quad | \cdot (4-2x) \cdot 2$$

$x > 2 \quad 2(2x-5) < (4-7x)$ $4x - 10 < 4 - 7x$ $6x < 14$ $x < \frac{7}{3} = 2\frac{1}{3}$	$x < 2 \quad 2(2x-5) > (4-7x)$ $4x - 10 > 4 - 7x$ $6x > 14$ $x > \frac{7}{3} = 2\frac{1}{3}$
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$$x > 2 \wedge x < 2\frac{1}{3}$$

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

$$x = 2\frac{1}{3} = \frac{7}{3}$$

$$\frac{\frac{7}{3} - 5}{4 - \frac{7}{3}} = \frac{-0.5}{-0.5} = 1 > \frac{1}{2} \quad \checkmark$$

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

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

$$4) \quad x^2 - 8x - 70 > 0$$

$$(x+7)(x-10) > 0$$



Probe:

<u>I</u>	$x = -3$	$(-3+7)(-3-10) > 0$	✓
<u>II</u>	$x = 0$	$(0+7)(0-10) < 0$	✗
<u>III</u>	$x = 11$	$(11+7)(11-10) > 0$	✓

$$\mathcal{L} = \{x \in \mathbb{R} \mid x < -7 \vee x > 10\}$$