Riešte v množine reálnych čísel

① $(|x| - 3)(x + 1) = -3$

② $|2x - 7| - |5 - 3x| = -8$

⑥ $2|x + 3| + |x - 4| = -2$ $\quad x = \phi$

⑦ $|x| + |x - 2| = 2$

③ $|x + 5| = 2$ $\xrightarrow{\text{alebo}}$

$x + 5 \geq 0 \qquad x + 5 < 0$
$x \geq -5 \qquad\quad x < -5$
$x + 5 = 2 \checkmark \qquad -x - 5 = 2$
$x = -3 \qquad\qquad x = -7 \checkmark$

$x = \{-7, -3\}$

④ $|x - 3| = |x + 5| \;(\;)^2$ $\qquad$ NB ----

$(x-3)^2 = (x+5)^2$
$x^2 - 6x + 9 = x^2 + 10x + 25$
$-16 = 16x$

$\quad -5 \quad -1 \quad 3$

$x = \{-1\}$

⑤ $|x + 3| = 4x - 3 \;|(\;)^2$

$(x + 3)^2 = (4x - 3)^2$
$x^2 + 6x + 9 = 16x^2 - 24x + 9$
$15x^2 - 30x = 0$
$15x(x - 2) = 0 \Leftrightarrow x_1 = 0 \lor x_2 = 2$

$4x - 3 \geq 0$
$x \geq \frac{3}{4}$

$Sk:$
$L(0) = 3 \qquad L(2) = 5$
$P(0) = -3 \qquad P(2) = 5$

$x = \{2\}$

① $\quad x \geq 0$
$x \in \langle 0, \infty) \ldots (x - 3)(x + 1) = -3$
$x^2 - 2x - 3 = -3$
$x^2 - 2x = 0$
$x(x - 2) = 0 \Leftrightarrow x_1 = 0 \lor x_2 = 2$ ✓

$x < 0$
$(-\infty, 0) \ldots (-x - 3)(x + 1) = -3$
$-x^2 - 4x - 3 = -3$
$-x(x + 4) = 0 \Leftrightarrow x_1 = 0 \lor x_2 = -4$

$x = \{0, 2, -4\}$

② $|2x - 7| - |5 - 3x| = -8$

NB: $2x - 7 = 0 \qquad 5 - 3x = 0$
$\quad x = \frac{7}{2} \qquad\qquad x = \frac{5}{3}$

	$(-\infty, \frac{5}{3})$	$\langle \frac{5}{3}, \frac{7}{2})$	$\langle \frac{7}{2}, \infty)$
$|2x - 7|$	$-2x + 7$	$-2x + 7$	$2x - 7$
$|5 - 3x|$	$5 - 3x$	$-5 + 3x$	$-5 + 3x$
	$-2x + 7 - (5 - 3x) = -8$	$-2x + 7 + 5 - 3x = -8$	$2x - 7 + 5 - 3x = -8$
	$-2x + 7 - 5 + 3x = -8$	$-5x + 12 = -8$	$-x - 2 = -8$
	$x + 2 = -8$	$5x = 20$	$x = 6 \in \langle \frac{7}{2}, \infty)$
	$x = -10$	$x = 4 \notin \langle \frac{5}{3}, \frac{7}{2})$	$x_3 = \{6\}$
	$x_1 = \{-10\} \; \in (-\infty, \frac{5}{3})$	$x_2 = \phi$	

$x = x_1 \cup x_2 \cup x_3 = \{-10, 6\}$

(7) $|x| + |x-2| = 2$

NB. $x=0$ $x=2$

	$(-\infty,0)$ 0	$\langle 0,2\rangle$	2 $(2,\infty)$
$|x|$	$-x$	x	x
$|x-2|$	$-x+2$	$-x+2$	$x-2$

$-x-x+2=2$
$-2x=0$
$x=0$
$x_1=\phi$

$x-x+2=2$
$2=2$
$x_2=\langle 0,2\rangle$

$x+x-2=2$
$2x=4$
$x=2$ $x_3=\{2\}$

$\Rightarrow x=\langle 0,2\rangle$