APSOLUTNA VREDNOST BROJA

APSOLUTNA VREDNOST BROJA JE RASTOJANJE TOG BROJA OD NULE NA BROJEVNOJ PRAVOJ.

POŠTO JE RASTOJANJE UVEK POZITIVNO ONDA JE I APSOLUTNA VREDNOST UVEK POZITIVAN BROJ.

$|3| = 3$ $\quad |5| = 5$ $\quad |-173| = 173$

$|-12| = 12$ $\quad |0| = 0$ $\quad |-37| = 37$

$|8| = 8 \quad (8 \geq 0 \quad |8| = 8)$

$|-8| = 8 \quad (-8 < 0 \quad |-8| = -(-8))$

ODAVDE ZAKLJUČUJEMO DEFINICIJU APSOLUTNE VREDNOSTI

$$|x| = \begin{cases} x, & x \geq 0 \\ -x, & x < 0 \end{cases}$$

(1) REŠI JEDNAČINU

$$|2x-7| = 5$$

$$|2x-7| = \begin{cases} 2x-7, & 2x-7 \geq 0, \quad 2x \geq 7, \quad x \geq \frac{7}{2} \quad \text{I} \\ -(2x-7), & 2x-7 < 0, \quad 2x < 7, \quad x < \frac{7}{2} \quad \text{II} \end{cases}$$

I $\quad x \geq \frac{7}{2}$

$|2x-7| = 5$

$2x-7 = 5$

$2x = 5+7$

$2x = 12$

$x = 6$ $\quad$ T $(6 \geq \frac{7}{2})$

II $\quad x < \frac{7}{2}$

$|2x-7| = 5$

$-(2x-7) = 5$

$-2x+7 = 5$

$-2x = 5-7$

$-2x = -2$

$x = 1$ $\quad$ T $(1 < \frac{7}{2})$

(2) $|3x+5| = 10-2x$

$$|3x+5| = \begin{cases} 3x+5, & 3x+5 \geq 0,\ 3x \geq -5,\ x \geq -\frac{5}{3} \quad \text{I} \\ -(3x+5), & 3x+5 < 0,\ 3x < -5,\ x < -\frac{5}{3} \quad \text{II} \end{cases}$$

I $x \geq -\frac{5}{3}$

$|3x+5| = 10-2x$

PROVERI USLOV $3x+5 = 10-2x$

$3x+2x = 10-5$

$5x = 5$

$\boxed{x = 1}$ (T)

II $x < -\frac{5}{3}$

$|3x+5| = 10-2x$

$-(3x+5) = 10-2x$

$-3x-5 = 10-2x$

$-3x+2x = 10+5$

$-x = 15$

$\boxed{x = -15}$ (T)

PROVERI USLOV

(3) $2|7-x| = 4-7x$

$$|7-x| = \begin{cases} 7-x, & 7-x \geq 0,\ -x \geq -7,\ x \leq 7 \\ -(7-x), & 7-x < 0,\ -x < -7,\ x > 7 \end{cases}$$

I $x \leq 7$

$2|7-x| = 4-7x$

$2(7-x) = 4-7x$

$14-2x = 4-7x$

$7x-2x = 4-14$

$5x = -10$

$\boxed{x = -2}$ (T)

II $x > 7$

$2|7-x| = 4-7x$

$2(-(7-x)) = 4-7x$

$2(-7+x) = 4-7x$

$-14+2x = 4-7x$

$7x+2x = 4+14$

$9x = 18$

$\boxed{x = 2}$ (1) $(2 < 7)$

① $|2x-3|+|5-x|=6x-7$

$$|2x-3| = \begin{cases} 2x-3, & 2x-3 \geq 0,\ 2x \geq 3, & x \geq \frac{3}{2} \\ -(2x-3), & 2x-3 < 0,\ 2x < 3; & x < \frac{3}{2} \end{cases}$$

$$|5-x| = \begin{cases} 5-x, & 5-x \geq 0,\ -x \geq -5, & x \leq 5 \\ -(5-x), & 5-x < 0,\ -x < -5, & x > 5 \end{cases}$$

	I	II	III
$\frac{3}{2}$			
5			
$\|2x-3\|$	$-(2x-3)$	$2x-3$	$2x-3$
$\|5-x\|$	$5-x$	$5-x$	$-(5-x)$

I $\quad x < \frac{3}{2}$

$|2x-3|+|5-x|=6x-7$

$-(2x-3)+5-x=6x-7$

$-2x+3+5-x=6x-7$

$-6x-2x-x=-7-3-5$

$-9x=-15$

$x=\frac{15}{9} \mid :3$

$x=\frac{5}{3}=1\frac{2}{3}$ ① $\left(\frac{5}{3} > \frac{3}{2}\right)$

II $\frac{3}{2} \leq x \leq 5$

$|2x-3|+|5-x| = 6x-7$

$2x-3+5-x = 6x-7$

$2x-6x-x = 3-5-7$

$-5x = -9$

$\boxed{x = \frac{9}{5} = 1\frac{4}{5}}$ (T) $\left(\frac{9}{5} \geq \frac{3}{2} \quad \frac{9}{5} \leq 5\right)$

III $x > 5$

$|2x-3|+|5-x| = 6x-7$

$2x-3+(-(5-x)) = 6x-7$

$2x-3-(5-x) = 6x-7$

$2x-3-5+x = 6x-7$

$2x+x-6x = 3+5-7$

$-3x = 1$

$\boxed{x = -\frac{1}{3}}$ (1) $\left(-\frac{1}{3} < 5\right)$