

ROVNICE S ABSOLÚTNOU HODNOTOU

- sú rovnice, ktoré obsahujú neznámu v absolútnej hodnote
- metódy riešenia
 - geometrická význam absol. hodnoty
 - definícia absol. hodnoty
 - metóda nulových bodov
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$$\begin{aligned} &\rightarrow x+2=4 \\ &x+|2|=4 \quad \times \\ &|x+2|=4 \quad \checkmark \end{aligned}$$

Úloha: Riešte rovnice v množine reálnych čísel

1. $|x+2|=1$

vzdial. od (-2) $= 1$ $\rightarrow -3, -1$

$x = \{-3, -1\}$

$|x+2|=1$

$$\begin{aligned} &\begin{cases} x+2 \geq 0 \\ x+2=1 \\ x=-1 \end{cases} \quad \begin{cases} x+2 < 0 \\ -x-2=1 \\ x=-3 \end{cases} \end{aligned}$$

$|a| \geq 0 \rightarrow 2. |x-1| = -1 \rightarrow x = \emptyset$

3. $|2x-8|=0 \rightarrow 2x-8=0$

$x=4$

$x = \{4\}$

4. $|3x-7|=2$

$3x-7 \geq 0$

$x \geq \frac{7}{3}$

$3x-7 < 0$

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

$3x-7=2$

$3x=9$

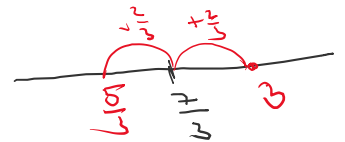
$x=3$

$7-3x=2$

$5=3x$

$\frac{5}{3}=x$

$x = \{3, \frac{5}{3}\}$



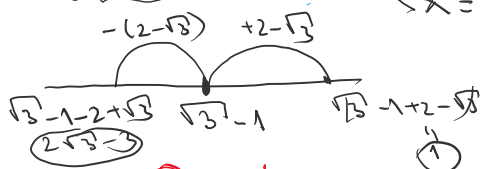
$|2x-1|=6$
vzdial od $\frac{1}{2}$ je $\frac{6}{2}$

5. $|x-\sqrt{3}+1|=2-\sqrt{3}$

$x = \sqrt{3}-1$

$x=1$

$x = 2\sqrt{3}-3$

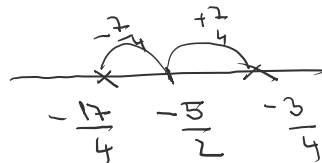


6. $|7-4x|+2=1$

$|7-4x|=-1 \rightarrow x = \emptyset$

7. $|2x+5|-4=-\frac{1}{2}$

$|2x+5|=\frac{9}{2}$



$x = \{-\frac{17}{4}, -\frac{3}{4}\}$

def. algebra

8. $|x-3| = 3-x$

$|x-3| = -(x-3)$

$x-3 < 0$
 $x < 3$

$x \in (-\infty, 3)$

$2x+5 \geq 0 \dots x \geq -\frac{5}{2}; x \in (-\frac{5}{2}, \infty)$
 $|2x+5| = 5+2x$

9. $|x-1| = 2(x+1)$

$x-1 \geq 0$
 $x \geq 1$

$x-1 = 2(x+1)$
 $-3 = x$ $\notin [1, \infty)$

$x-1 < 0$
 $x < 1$

$-x+1 = 2(x+1)$
 $-1 = 3x$
 $-\frac{1}{3} = x \in (-\infty, 1)$

$f(-3) = 4$
 $P(-3) = -4$

$x = \{-\frac{1}{3}\}$

10. $|x+3| = 4x-3$

$x+3 \geq 0$
 $x \geq -3$

$x+3 = 4x-3$
 $x = 2$ ✓

$x+3 < 0$
 $x < -3$

$-x-3 = 4x-3$
 $0 = 5x$
 $x = 0$ ✗

$x = \{2\}$

11. $|1 - |1-x|| = 1$

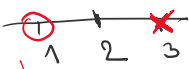
$1-x \geq 0$
 $1 \geq x$

$|1-(1-x)| = 1$
 $|1-x+x| = 1$
 $|x| = 1$



$1-x < 0$
 $1 < x$

$|1-(-1+x)| = 1$
 $|1+1-x| = 1$
 $|2-x| = 1$

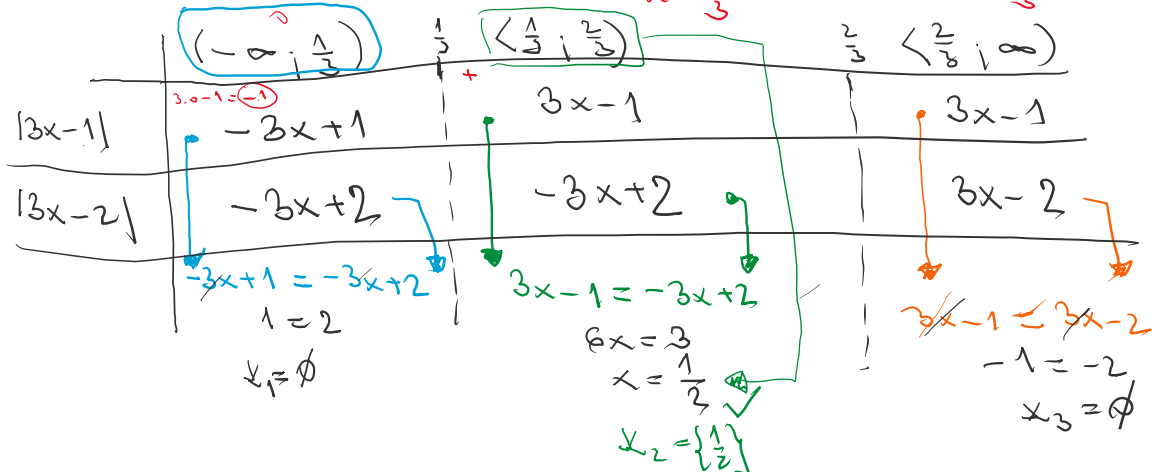


$x = \{-1, 1, 3\}$

$|a| = |-a|$
 $|2-x| = |x-2|$

12. $|3x-1| = |3x-2| \rightarrow NB: 3x-1=0$
 $x = \frac{1}{3}$

$3x-2=0$
 $x = \frac{2}{3}$



$x = x_1 \cup x_2 \cup x_3 = \{\frac{1}{2}\}$

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$$13. |x+1| - |1-x| + 2 = x$$

$$(14) |2x-4| = 6$$

$$(16) |x-4| = 4-x$$

$$(15) |x-7| = \frac{2x+1}{3}$$

$$(17) |2x+3| + 5 = 0$$

$$14. |x-4| + |2x-1| = |x| + 3$$