

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

a $\frac{-a}{\text{negativ}}$
 $\frac{1}{a}$
 $\frac{1}{\text{odwrotność}}$

0
 x

$0 \rightarrow -0 = 0$
 $0 \rightarrow \cancel{x}$

$:=$
 if $a = 0$
 $a = b$
 $b = a$

$$|x| = \begin{cases} x \\ -x \end{cases}$$

$a > 0$
 $|y| = a \Leftrightarrow y = a \vee y = -a$

$|y| < a \Leftrightarrow y < a \wedge y > -a$

$|y| > a \Leftrightarrow y > a \vee y < -a$

$a > 0$
 $|y| = -5 \Leftrightarrow y = -5 \vee y = 5$
 $y \neq \emptyset$

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

$|y| < -5 \Leftrightarrow y < -5 \wedge y > 5$
 $\emptyset$

$|y| > -5 \Leftrightarrow y > -5 \vee y < 5$
 $y \in \mathbb{R}$

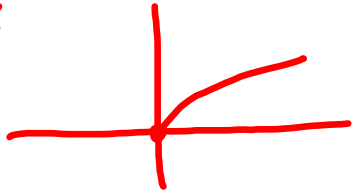
$|x-5| > 2x-2 \dots$
 $|x-5| = 2x-2$

$$\sqrt[4]{x} < y = \sqrt{x}$$

$(-1, 5)$

$$\frac{|-1,5| > 1}{1,5 > 1} \wedge \frac{|-1,5| < 2}{1,5 < 2}$$

$x \in (1, 2)$



$$\frac{|x| < 2 \Leftrightarrow x < 2}{x \in (-2, 2)}$$

$$x \in (-\infty, -1) \cup (1, +\infty)$$

$$\Delta_x = 9(m-3)^2 - 4(m-3)(m+2)$$

$$(m-3)[9(m-3) - 4m - 8] = (m-3)(5m - 35)$$

$$\boxed{\Delta_x = 5(m-3)(m-7)}$$

$$\Delta_t < 0$$

$$\Delta_t = 0$$

$$\Delta_t > 0$$

(1)

(2)

$$\begin{matrix} \swarrow & \searrow \\ x_1, x_2, x_3, x_4 & \end{matrix} \begin{matrix} t_1 = 15 \\ t_2 = 30 \end{matrix}$$

$x^2 - 3x + 2 = 0$
 $x_1 = 1$
 $x_2 = 2$
 $\Delta_t = 1$
 $t_1 = 1$
 $t_2 = 2$
 $\Delta_t = 1$
 $t_1 = 1$
 $t_2 = 2$

1 Row. (x)
 $\Delta_t < 0 \vee \begin{cases} \Delta_t = 0 \\ t_1 < 0 \end{cases} \vee \begin{cases} \Delta_t > 0 \\ t_1, t_2 > 0 \\ t_1 + t_2 < 0 \end{cases}$

1 Row -0 $x^2 = t$

2 Row (x_1, x_2)

$\Delta_t = 0$

$t_1 + t_2$
 $x_1 + x_2$

$t = -5 \times 1$

$x_1 + x_2 = -\frac{b}{a}$
 $x_1 \cdot x_2 = \frac{c}{a}$

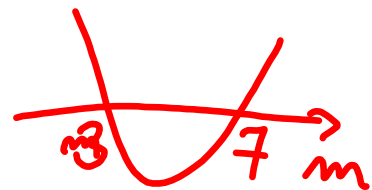
$x_1 \cdot x_2 > 0$
 $\uparrow$
 $\sqrt{-}$
 $\sqrt{+}$
 $x_1 + x_2 < 0$
 $\sqrt{-}$
 $\sqrt{+}$
 -0

$t_1 \cdot t_2 > 0$
 $\uparrow$
 $\sqrt{+}$
 $\sqrt{+}$
 0

$$\begin{array}{ccc}
 t_1 & t_2 & ++ \\
 \cancel{t_1} & 0 & \\
 & \left\{ \begin{array}{l} \Delta_t > 0 \\ t_1 \cdot t_2 > 0 \\ t_1 + t_2 > 0 \end{array} \right. &
 \end{array}$$

$$\begin{array}{ccc}
 0.1 & 0.2 & 0.3 \\
 \{m \in (3,7)\} & \{m \in [3,7]\} &
 \end{array}$$

$$\Delta = 5(m-3)(m-7)$$



$$0,1 \Delta_t < 0 \Leftrightarrow m \in (3, 7)$$

$$\Delta_t = 0 \Leftrightarrow m \in \{3, 7\}$$

$$\Delta_t > 0 \Leftrightarrow m \in (-\infty, 3) \cup (7, +\infty)$$

$$t_1 \cdot t_2 = \frac{c}{a} = \frac{m+2}{m-3} > 0 \quad | \cdot (m-3)^2 > 0$$

$$(m+2)(m-3) > 0$$



$$t_1 \cdot t_2 > 0 \Leftrightarrow m \in (-\infty, -2) \cup (3, +\infty)$$

$$t_1 \cdot t_2 = 0 \Leftrightarrow m \in \{-2\}$$

$$t_1 \cdot t_2 < 0 \Leftrightarrow m \in (-2, 3)$$