

$$2.5 \quad a) |x-7| = |x|$$

$$\Leftrightarrow x-7 = x \quad \text{tai} \quad x-7 = -x$$

$$\Leftrightarrow 0 = 7 \quad \downarrow \quad \text{tai} \quad 2x = 7 \quad | :2 \quad \Leftrightarrow \underline{x = \frac{7}{2}}$$

$$b) |5-x| = |3x|$$

$$\Leftrightarrow 5-x = 3x \quad \text{tai} \quad 5-x = -3x$$

$$\Leftrightarrow 5 = 4x \quad \text{tai} \quad 2x = -5$$

$$\Leftrightarrow \underline{x = \frac{5}{4}} \quad \text{tai} \quad \underline{x = -\frac{5}{2}}$$

$$2.21 \quad a) |2x+3| + x = 0$$

$$|2x+3| = 3$$

$$\Leftrightarrow |2x+3| = -x$$

$$\Leftrightarrow 2x+3 = -x \quad \text{tai} \quad 2x+3 = -(-x)$$

$$\Leftrightarrow 3x = -3 \quad | :3 \quad \text{tai} \quad x = -3$$

$$\Leftrightarrow x = -1$$

$$\text{Jark. } x = -1 : |2 \cdot (-1) + 3| - 1 = 0 \quad \Leftrightarrow |1| - 1 = 0 \quad \checkmark$$

$$x = -3 : |2 \cdot (-3) + 3| - 3 = 0 \quad \Leftrightarrow |-3| - 3 = 0 \quad \checkmark$$

$$\underline{\text{Vast. } x = -3 \quad \text{tai} \quad x = -1}$$

$$b) |2x-3| = x-2$$

$$\Leftrightarrow 2x-3 = x-2 \quad \text{tai} \quad 2x-3 = -(x-2)$$

$$\Leftrightarrow x = 1 \quad \text{tai} \quad 3x = 5$$

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

$$\text{Jark. } x = 1 : |2 \cdot 1 - 3| = 1 - 2 \quad \Leftrightarrow |-1| = -1 \quad \downarrow$$

$$x = \frac{5}{3} : |2 \cdot \frac{5}{3} - 3| = \frac{5}{3} - 2 \quad \Leftrightarrow |\frac{10}{3} - 3| = \frac{1}{3} - \frac{6}{3}$$

$$\Leftrightarrow |\frac{1}{3}| = -\frac{1}{3} \quad \downarrow$$

Vast. ei nells.

$$\text{TAL: } |2x-3| = x-2$$

$$\begin{cases} 2x-3 \geq 0 & \Leftrightarrow 2x \geq 3 \quad | :2 > 0 \\ & \Leftrightarrow x \geq \frac{3}{2} \end{cases}$$

$$1^\circ \quad x \geq \frac{3}{2} : \underbrace{|2x-3|}_{\geq 0} = x-2 \quad \Leftrightarrow 2x-3 = x-2 \quad \Leftrightarrow x = 1 \quad \text{ei kätý}$$

$$2^\circ \quad x < \frac{3}{2} : \underbrace{|2x-3|}_{< 0} = x-2 \quad \Leftrightarrow -(2x-3) = x-2 \quad \Leftrightarrow x = \frac{5}{3} \quad \text{ei kätý}$$

1° ja 2° Vast. ei nells.

Esim. $|x| + |x-5| = 7$

$$1^\circ \quad x + (x-5) = 7$$

$$\Leftrightarrow 2x = 12 \quad \Leftrightarrow x = 6$$