

$$\Leftrightarrow 6x - 4x > 3x \quad | -3x$$

$$\Leftrightarrow 6x - 4x - 3x > 0$$

$$\Leftrightarrow -x > 0 \quad | :(-1) < 0$$

$$\Leftrightarrow \underline{x < 0}$$

$$b) \quad \frac{3(5+2x)}{12} \leq \frac{x}{2} + 1 \quad | \cdot 12$$

$$\Leftrightarrow 3(5+2x) \leq 6x + 12$$

$$\Leftrightarrow 15 + 6x \leq 6x + 12$$

$$\Leftrightarrow 6x - 6x \leq 12 - 15$$

$$\Leftrightarrow 0 \leq -3 \quad \downarrow \text{epätösi} \quad \rightarrow \underline{\text{ei ratkaisua}}$$

$$c) \quad \sqrt{2}x - \sqrt{2} \geq -\sqrt{8} \cdot x$$

$$\sqrt{8} = \sqrt{4 \cdot 2} = \sqrt{4} \cdot \sqrt{2} = 2\sqrt{2}$$

$$\Leftrightarrow \sqrt{2}x - \sqrt{2} \geq 2\sqrt{2}x \quad | : \sqrt{2} > 0$$

$$\Leftrightarrow \frac{\sqrt{2}x}{\sqrt{2}} - \frac{\sqrt{2}}{\sqrt{2}} \geq \frac{2\sqrt{2}x}{\sqrt{2}}$$

$$\Leftrightarrow x - 1 \geq 2x$$

$$\Leftrightarrow -x \geq 1 \quad | \cdot (-1) < 0$$

$$\Leftrightarrow \underline{x \leq -1}$$

$$9.20 \quad a) \quad 2 - x < 3x + 6 \leq 16 - 2x$$

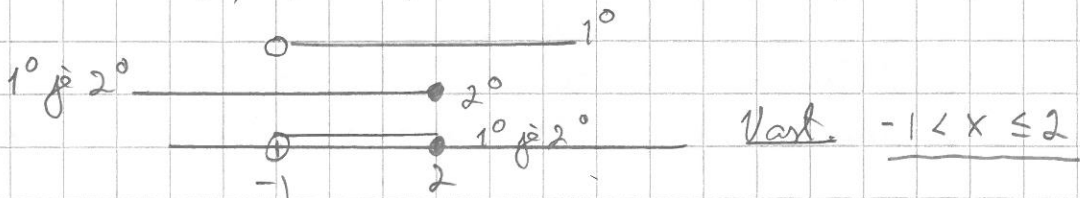
$$\Leftrightarrow 1^\circ \quad 2 - x < 3x + 6 \quad \text{ja} \quad 2^\circ \quad 3x + 6 \leq 16 - 2x$$

$$\Leftrightarrow -4x < 4 \quad | :(-4) < 0$$

$$\Leftrightarrow 5x \leq 10 \quad | :5 > 0$$

$$\Leftrightarrow x > -1$$

$$\Leftrightarrow x \leq 2$$



11. 2. asteen yhtälön ratkaisukaava

$$ax^2 + bx + c = 0 \quad (a \neq 0)$$

$$\Leftrightarrow \boxed{x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}}$$

Esim. $x^2 = -2x + 3 \quad \Leftrightarrow x^2 + 2x - 3 = 0$

$$\Leftrightarrow x = \frac{-2 \pm \sqrt{2^2 - 4 \cdot 1 \cdot (-3)}}{2 \cdot 1} = \frac{-2 \pm \sqrt{4 + 12}}{2} = \frac{-2 \pm \sqrt{16}}{2}$$

$$\begin{cases} a = 1 \\ b = 2 \\ c = -3 \end{cases}$$