

$$5/60 \quad a) \left. \begin{array}{l} \frac{3}{x-1} < 0 \\ 3 > 0 \end{array} \right\} \Rightarrow \begin{array}{l} x-1 < 0 \\ \underline{x < 1} \end{array} \quad \begin{array}{l} (\text{folosim regula semnelor}) \\ \Rightarrow x \in (-\infty, 1) \end{array}$$

$$i) \left. \begin{array}{l} \frac{-7}{-x+4} \geq 0 \\ -7 < 0 \end{array} \right\} \Rightarrow \begin{array}{l} -x+4 \leq 0 \\ -x \leq -4 \quad | \cdot (-1) \\ \underline{x \geq 4} \end{array} \Rightarrow x \in [4, +\infty)$$

$$15/61 \quad a) \underbrace{|x+2|}_{+} \cdot \underbrace{(|x-1|-3)}_{-} \leq 0$$

$$\Rightarrow |x-1|-3 \leq 0$$

$$|x-1| \leq 3$$

$$-3 \leq x-1 \leq 3 \quad | +1$$

$$-2 \leq x \leq 4 \Rightarrow \underline{x \in [-2, 4]}$$

$$f) \frac{5 - |2x+3|}{|x-1|} \geq 0 \quad (+) \Rightarrow \begin{cases} 5 - |2x+3| \geq 0 \\ -|2x+3| \geq -5 \quad | \cdot (-1) \\ |2x+3| \leq 5 \end{cases}$$

$$\Rightarrow \underline{-5 \leq 2x+3 \leq 5 \quad | -3}$$

$$\Rightarrow \underline{-8 \leq 2x \leq 2 \quad | : 2}$$

$$\underline{-4 \leq x \leq 1} \Rightarrow \underline{x \in [-4, 1]}$$

$$16. \quad e) \quad 2x\sqrt{4-2\sqrt{3}} + x \cdot \sqrt{(\sqrt{3}-2)^2} \leq \sqrt{28-10\sqrt{3}} - \sqrt{(1-2\sqrt{3})^2} \quad (*)$$

Soluție: $\sqrt{4-2\sqrt{3}} = \sqrt{(\sqrt{3}-1)^2} = |\sqrt{3}-1| = \underline{\sqrt{3}-1}$

↓ folonți formulele de calcul prescurtat
 $(a-b)^2 / (a+b)^2$ sau formula radicalilor compusi

$$\underline{\sqrt{28-10\sqrt{3}} = \sqrt{(5-\sqrt{3})^2} = |5-\sqrt{3}| = 5-\sqrt{3}}$$

$$(*) \quad 2x \cdot (\sqrt{3}-1) + x \cdot (2-\sqrt{3}) \leq 5-\sqrt{3} - (2\sqrt{3}-1)$$

$$2x\sqrt{3} - 2x + 2x - \sqrt{3} \cdot x \leq 5 - \sqrt{3} - 2\sqrt{3} + 1$$

$$\sqrt{3} \cdot x \leq 6 - 3\sqrt{3}$$

$$\Rightarrow x \leq \frac{\sqrt{3} | 6 - 3\sqrt{3}}{\sqrt{3}}$$

$$x \leq \frac{6\sqrt{3} - 3 \cdot 3}{3}$$

$$\underline{x \leq 2\sqrt{3} - 3}$$

$$17/62 \quad x \in \mathbb{Z}^*: \quad x+3 < \frac{2x+13}{3} < x+5 \quad | \cdot 3$$

$$3x+9 \quad (A) \quad 2x+13 \quad (B) \quad < 3x+15$$

$$(A) \quad \begin{aligned} 3x+9 &< 2x+13 \\ 3x-2x &< 13-9 \\ x &< 4 \end{aligned}$$

$$(B) \quad \begin{aligned} 2x+13 &< 3x+15 \\ 13-15 &< 3x-2x \\ -2 &< x \end{aligned}$$

$$\underbrace{-2 < x < 4}_{(A)} \quad | \quad \underbrace{-2 < x}_{(B)} \quad \Rightarrow \quad \underline{[-2, 4]}$$