

$$d) \log 2 + \log(x^2-1) = \log 2(x^2-1) \left\{ \begin{array}{l} \log 2(x^2-1) \leq \log |x-1|^2 \\ 2 \log |x-1| = \log |x-1|^2 \end{array} \right. \quad \log a \leq \log b \Rightarrow a \leq b, \text{ jer je } \log \text{ narašćajuća funkcija!}$$

$$2(x^2-1) \leq |x-1|^2$$

$$2(x-1)(x+1) \leq |x-1|^2$$

$$\text{def. oblasti je } \log: (0, \infty) = \mathbb{R}^+$$

$$\bullet x^2-1 > 0 \Rightarrow x^2 > 1 \Rightarrow |x| > 1 \Rightarrow (-\infty, -1) \cup (1, \infty) \star$$

$$|x-1| = \begin{cases} x-1; & x \geq 1 \\ 1-x; & x < 1 \end{cases}$$

$$i) \underline{x > 1}$$

$$2(x-1)(x+1) \leq (x-1)^2 \quad / : (x-1) > 0$$

$$2(x+1) \leq x-1$$

$$2x+2 \leq x-1$$

$$\underline{x \leq -3} \quad \underline{\emptyset}$$

$$ii) \underline{x = 1}$$

$$0 \leq 0 \checkmark$$

$$\underline{\{1\}}$$

$$iii) \underline{x < 1}$$

$$2(x-1)(x+1) \leq (1-x)^2$$

$$2(x-1)(x+1) \leq (x-1)^2 \quad / : (x-1) < 0$$

$$2(x+1) \geq x-1$$

$$2x+2 \geq x-1$$

$$\underline{x \geq -3} \quad \underline{[-3, 1)}$$

$$D = [-3, 1] \cap ((-\infty, -1) \cup (1, \infty)) = \underline{\underline{[-3, -1]}}$$

$$\inf D = \min D = -3$$

$$\sup D = -1, \text{ max ne postoji}$$

$$e) \log 2 + \log |x^2-1| = \log 2|x-1||x+1| \left\{ \begin{array}{l} 2 \log |x-1| = \log |x-1|^2 \end{array} \right.$$

$$2 \log |x-1| = \log |x-1|^2$$

$$|x^2-1| > 0 \text{ za } x \neq \pm 1$$

$$|x-1| > 0 \text{ za } x \neq 1$$

$$\text{def. oblasti je } \mathbb{R} \setminus \{-1, 1\}$$

$$\log 2|x-1||x+1| \leq \log |x-1|^2$$

$$2|x-1||x+1| \leq |x-1|^2 \quad / : |x-1| \geq 0$$

$$2|x+1| \leq |x-1|$$

$$|x+1| = \begin{cases} x+1; & x \geq -1 \\ -x-1; & x < -1 \end{cases}$$

$$|x-1| = \begin{cases} x-1; & x \geq 1 \\ 1-x; & x < 1 \end{cases}$$

$$i) \underline{x \geq 1}$$

$$2(x+1) \leq x-1$$

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

$$\underline{\emptyset}$$

$$ii) \underline{-1 \leq x < 1}$$

$$2(x+1) \leq 1-x$$

$$3x \leq -1$$

$$\underline{x \leq -\frac{1}{3}}$$

$$\underline{\underline{[-1, -\frac{1}{3}]}}$$

$$iii) \underline{x < -1}$$

$$2(-x-1) \leq 1-x$$

$$-x \leq 3$$

$$\underline{x \geq -3}$$

$$\underline{\underline{[-3, -1)}}$$

$$E = ([-3, -1) \cup [-1, -\frac{1}{3}]) \cap (\mathbb{R} \setminus \{-1, 1\}) = [-3, -\frac{1}{3}] \setminus \{-1, 1\} = \underline{\underline{[-3, -1) \cup (-1, -\frac{1}{3}])}}$$

$$\inf E = \min E = -3$$

$$\sup E = \max E = -\frac{1}{3}$$

$$f) \dots \Rightarrow 2(x^2-1) \leq (x-1)^2 \longrightarrow 2(x-1)(x+1) \leq (x-1)^2 \quad / : (x-1) > 0$$

$$\text{def. oblasti je } \log:$$

$$\left. \begin{array}{l} x^2-1 > 0 \Rightarrow (-\infty, -1) \cup (1, \infty) \\ x-1 > 0 \Rightarrow (1, \infty) \end{array} \right\} \underline{\underline{x \in (1, \infty)}}$$

$$2(x+1) \leq x-1$$

$$\underline{x \leq -3} \quad \underline{\underline{(-\infty, -3]}}$$

$$F = (-\infty, -3] \cap (1, \infty) = \underline{\underline{\emptyset}}$$

$$\inf \emptyset = \infty$$

$$\sup \emptyset = -\infty$$

$$\min \emptyset \text{ in } \max \emptyset \text{ ne postoje}$$