

NR. 2 FAZĂ APLICAȚII :  $a \in \mathbb{R}, b \in \mathbb{R}$

$$\min(a, b) = \begin{cases} a, & \text{daca } a \leq b \\ b, & \text{daca } b \leq a \end{cases} \quad \max(a, b) = \begin{cases} a, & \text{daca } a \geq b \\ b, & \text{daca } b \geq a \end{cases}$$

Eșc:

$$\min\left(-\frac{5}{6}; -\frac{7}{8}\right) = A \Rightarrow A = ? \quad \boxed{\begin{array}{l} -1 < 10 \mid \cdot (-1) \\ 1 > -10 \end{array}}$$

$$\text{Comparare: } \frac{5}{6} \text{ cu } \frac{7}{8} : \underbrace{5 \cdot 8}_{40} < \underbrace{6 \cdot 7}_{42} \Rightarrow \frac{5}{6} < \frac{7}{8} \mid \cdot (-1)$$

$$-\frac{5}{6} > -\frac{7}{8} \Rightarrow A = -\frac{7}{8} \quad \left\{ \begin{array}{l} \frac{9}{5} = \frac{20}{24} \quad \frac{7}{8} = \frac{21}{24} \\ -\frac{20}{24} > -\frac{21}{24} \end{array} \right.$$

$$\max\left(\frac{4}{3}, \frac{7}{6}\right) = B \quad \frac{4 \cdot 6}{24} > \frac{5 \cdot 7}{21} \Rightarrow \frac{4}{3} > \frac{7}{6} \Rightarrow B = \frac{4}{3}$$

$$\min\left(\frac{1997}{1996}, \frac{2997}{2998}\right) = C \quad \left\{ \begin{array}{l} 1997 > 1996 \Rightarrow \frac{1997}{1996} > 1 \\ 2997 < 2998 \Rightarrow \frac{2997}{2998} < 1 \end{array} \right.$$

$$\Rightarrow \frac{2997}{2998} < \frac{1997}{1996} \Rightarrow C = \frac{2997}{2998}$$

$$\max\left(\underbrace{2\sqrt{75} - \sqrt{80}}_a ; \underbrace{\sqrt{48} - \sqrt{405}}_b\right) = D \Rightarrow D = ?$$

$$2\sqrt{75} = \sqrt{300} ; 300 > 80 \Rightarrow \sqrt{300} > \sqrt{80} \Rightarrow \sqrt{300} - \sqrt{80} > 0 \Rightarrow a > 0$$

$$48 < 405 \Rightarrow \sqrt{48} < \sqrt{405} \Rightarrow \sqrt{48} - \sqrt{405} < 0 \Rightarrow b < 0$$

$$\begin{array}{l} a>0 \\ b<0 \end{array} \Rightarrow a>b \Rightarrow \Delta = a - 2\sqrt{75} - \sqrt{80}$$

$$\min \left( \underbrace{\sqrt{363}}_a + \sqrt{400} ; \underbrace{\sqrt{243} + \sqrt{289}}_b \right) = T$$

$$\begin{array}{l} a = 11\sqrt{3} + 20 \\ b = 9\sqrt{3} + 17 \end{array} \left. \begin{array}{l} 11\sqrt{3} > 9\sqrt{3} \\ 20 > 17 \end{array} \right\} \begin{array}{l} 11\sqrt{3} + 20 > 9\sqrt{3} + 17 \\ \Rightarrow a > b \Rightarrow T = b \end{array}$$

$$\max \left( \underbrace{3\sqrt{5} - 2\sqrt{3}}_a ; \underbrace{7\sqrt{5} + 3\sqrt{3}}_b \right) = A \Rightarrow A = ?$$

$$\begin{aligned} a < b &\Leftrightarrow 3\sqrt{5} - 2\sqrt{3} < 7\sqrt{5} + 3\sqrt{3} \Leftrightarrow \\ 3\sqrt{5} - 7\sqrt{5} &< 3\sqrt{3} + 2\sqrt{3} \Leftrightarrow -4\sqrt{5} < 5\sqrt{3} (A) \Rightarrow \\ a < b (A) &\Rightarrow A = 7\sqrt{5} + 3\sqrt{3} \end{aligned}$$

Determinații valoarei măx. reale  $x$  astfel încât:

$$\begin{aligned} 1) |x| &= |-x| \quad \left. \begin{array}{l} 1) |-x| = |(-1) \cdot x| = |-1| \cdot |x| = 1 \cdot |x| = |x| \\ \text{adevărat, } (\forall) x \in \mathbb{R} \end{array} \right|_{|0|=0} \\ 2) |x| &= -|x| \quad \left. \begin{array}{l} 2) \text{dacă } x=0 \Leftrightarrow -|0|=-0=+0=0 \\ |x| = -|x| \Leftrightarrow x=0 \end{array} \right|_{|x|=-|x| \Leftrightarrow x=0} \\ 3) |x| &> -|x| \quad \left. \begin{array}{l} 3) |x| \geq 0, (\forall) x \in \mathbb{R} \quad |x| = -|x| \Leftrightarrow \\ -|x| \leq 0, (\forall) x \in \mathbb{R} \quad x=0 \end{array} \right|_{x=0} \\ 4) |x| &= 3\sqrt{5} - 2\sqrt{3} \quad \left. \begin{array}{l} 4) |x| \geq 0, (\forall) x \in \mathbb{R} \\ -|x| \leq 0, (\forall) x \in \mathbb{R} \end{array} \right| \Rightarrow \\ 5) |x| &= 3\sqrt{2} - 2\sqrt{6} \quad \left. \begin{array}{l} |x| \geq -|x|, (\forall) x \in \mathbb{R} \Rightarrow \\ |x| > -|x| \quad (A) \text{ p.d. } (\forall) x \in \mathbb{R}^* \end{array} \right| \end{aligned}$$

4)  $\text{Satz von Q: } |x| = 7 \Rightarrow x = 7 \text{ oder } x = -7$

$$3\sqrt{5} - 2\sqrt{3} = \sqrt{45} - \sqrt{12}, 45 > 12 \Rightarrow 3\sqrt{5} > 2\sqrt{3} \Rightarrow$$

$$\Rightarrow 3\sqrt{5} - 2\sqrt{3} > 0$$

$$\Rightarrow |x| = 3\sqrt{5} - 2\sqrt{3} \Leftrightarrow x = 3\sqrt{5} - 2\sqrt{3} \text{ oder}$$

$$x = -(3\sqrt{5} - 2\sqrt{3}) = 2\sqrt{3} - 3\sqrt{5}$$

5)  $|x| = 3\sqrt{2} - 2\sqrt{6}$

$$3\sqrt{2} - 2\sqrt{6} = \sqrt{18} - \sqrt{24} > \underbrace{18 < 24}_{\Rightarrow \sqrt{18} < \sqrt{24}} \Rightarrow$$

$$3\sqrt{2} < 2\sqrt{6} \Rightarrow 3\sqrt{2} - 2\sqrt{6} < 0 \quad \left. \begin{array}{l} |x| \geq 0, (+) x \in \mathbb{R} \\ |x| = -3 \text{ (imponidig)} \end{array} \right\}$$

$$|x| = 3\sqrt{2} - 2\sqrt{6} \Rightarrow x \in \emptyset$$