

K. MULTIMI - EXERCITII PROPUSE

1) Determinati elementele multimilor "A" si "B" apoi efectuati : $A \cup B$; $A \cap B$; A / B ; B / A

$$\text{a) } A = \left\{ x \in \mathbb{N} \mid \frac{6}{x-3} \in \mathbb{Z} \right\} \quad B = \left\{ x \in \mathbb{N} \mid \frac{5}{2-x} \in \mathbb{Z} \right\}$$

$$\text{b) } A = \left\{ x \in \mathbb{Z} \mid \frac{3x+5}{x+1} \in \mathbb{Z} \right\} \quad B = \left\{ x \in \mathbb{N} \mid \frac{2x-1}{x-2} \in \mathbb{Z} \right\}$$

$$\text{c) } A = \{ x \mid x = 2^n, n \in \mathbb{N} \text{ si } n \leq 3 \} \quad B = \{ y \in \mathbb{Z} \mid y = \sqrt{x} \}$$

$$\text{d) } A = \{ x \in \mathbb{N} \mid 2x + 3 \in \{2; 3; 5; 6\} \} \quad B = \{ x \in \mathbb{Z} \mid 3x - 2 \in [-7; 7] \}$$

$$\text{e) } A = \{ x \in \mathbb{Z} \mid |2x - 3| \leq 5 \} \quad B = \{ x \in \mathbb{Z} \mid |4 - 3x| < 2 \}$$

$$\text{f) } A = \{ x \in \mathbb{Z} \mid |x| = -x, |x| < 5 \} \quad B = \{ x \in \mathbb{Z} \mid |x| < \sqrt{7} \}$$

$$\text{g) } A = \{ x \in \mathbb{R} \mid |x| = +x, |x| \leq 6 \} \quad B = \{ x \in \mathbb{Z} \mid |x| < \sqrt{12} \}$$

2) Aflati cardinalul multimilor:

$$A = \{ x \mid x \text{ este cifra impara} \}$$

$$B = \{ x \in \mathbb{Z} \mid x \text{ este divizor propriu al lui } 12 \}$$

$$C = \{ y \in \mathbb{N} \mid y = 7a8b \text{ si } y \text{ divizibil cu } 6 \}$$

$$D = \{ x \in \mathbb{R} \mid \sqrt{4x^2 - 12x + 9} < 2 \}$$

$$E = \left\{ x \in \mathbb{Z} \mid \frac{x-1}{2} < x+1 \leq \frac{2x+5}{3} \right\}$$

3) Exerciții diverse

a) Fie $A = \{ x \in \mathbb{Z} \mid |x| \leq 124 \}$ si $B = (-215; 215)$, atunci numarul de elemente al multimii $A \cap B$ este

b) Daca $A = \{-1; \sqrt{2}; 0,5\}$ si $B = \{0,(3); 2; 0,25\}$ atunci : $A \cap Q = \dots$; $B \cap \mathbb{Z} = \dots$; $B - Q = \dots$

c) Multimea $A = \{0; 1; 2\}$, are un numar de submultimi.

d) In multimea $A = \{-1; 0,2; 0,(3); (-2)^2; -2^2; (-1)^3; 5; \sqrt{2}\}$ se gasesc....numere nenegative rationale

e) Multimea A are 10 elemente, iar multimea B are 6 elemente. Daca $A \cup B$ are 12 elemente atunci $A \cap B$ are elemente.

f) Determinați elementele mulțimilor A și B știind că îndeplinesc simultan condițiile:

1. $A \cup B = \{ x \in \mathbb{N} \mid 2 \leq x < 8 \}$; 2. $A \cap B = \{ 4; 5 \}$; 3. $A - B = \{ 3; 7 \}$

g) Determinati elementele multimii $A = \left\{ x \in \mathbb{N}^* \mid \left\{ \frac{5+x}{x} \in \mathbb{N} \text{ si } \frac{15+3x}{x} \in \mathbb{N} \right\} \text{ sau } \left\{ \frac{12+x}{x} \in \mathbb{N} \right\} \right\}$