VARIANTA 3

I. a) $A+B=\begin{pmatrix}2 & 2\\ 1 & -1\end{pmatrix}$; b) $x=\pm 1$; c) 3; d) $-\sqrt{2}$; e) x = 3;

f) $11+33+55+77+99=275$.

II. 1. a) {2,3}; b) A-C={1}=B-C; c) 3 funcții; d) $n\in\{1,2\}$;

e) 111, 112, 121, 211, 122, 212, 221, 222.

2. a) 80; b) ΔABC este dreptunghic în A, h=$\frac{30\cdot 16}{34}=\frac{240}{17}$; c) $\frac{30\cdot 16}{2}=240$;

d) $\frac{34}{2}=17$; e) $BD=\frac{450}{17}$.

III.

a) $P=3l \Rightarrow l=1$.

b) $A_E=\frac{l^2\sqrt{3}}{4}=\frac{\sqrt{3}}{4}$.

c) $\begin{cases}1+c^2=ip^2\\ 1+c+ip=3\end{cases} \Leftrightarrow \begin{cases}c=2-ip\\ 1+\left(4-4ip+ip^2\right)=ip^2\end{cases} \Leftrightarrow \begin{cases}c=2-ip\\ 4ip=5\end{cases}$, $ip=\frac{5}{4}$; $c=\frac{3}{4}$.

d) $A_U=\frac{\frac{3}{4}}{2}=\frac{3}{8}$.

e) $c_1=c_2=c \Rightarrow \begin{cases}2c+ip=3\\ ip=c\sqrt{2}\end{cases} \Rightarrow c=\frac{6-3\sqrt{2}}{2}; ip=3\sqrt{2}-3$.

f) $A_I=\frac{\left(\frac{6-3\sqrt{2}}{2}\right)^2}{2}=\frac{27-18\sqrt{2}}{4}$.

g) $A_U<A_I<A_E$.

IV.

a) $\frac{1}{1}=1\in A$; pt n=2, $\frac{1}{2}\in A$; pt $n=3, \frac{1}{3}\in A$, pt n=4 $\frac{1}{4}\in A$.

b) $\frac{1}{n}\neq 2, \frac{1}{n}\neq\frac{3}{2}\,\forall n\in$ **N***, căci $\frac{1}{n}\leq 1, \forall n\in$ **N***.

c) Calcul direct.

d) $\left\{\frac{1}{2}\right\}\subset A \Rightarrow \frac{1}{2}\in B, \left\{1,\frac{1}{2},\frac{1}{3},\frac{1}{6}\right\}\subset A, 1+\frac{1}{2}+\frac{1}{3}+\frac{1}{6}=2 \Rightarrow 2\in B$.

e) $\frac{1}{2^k+1}+\frac{1}{2^k+2}+...+\frac{1}{2^k+2^k}>\frac{1}{2^k+2^k}+\frac{1}{2^k+2^k}+...+\frac{1}{2^k+2^k}=\frac{2^k}{2^k+2^k}=\frac{2^k}{2^{k+1}}=\frac{1}{2}$

f) Din e),

$1+\frac{1}{2}+\frac{1}{2+1}+\frac{1}{2+2}+\frac{1}{2^2+1}+...+\frac{1}{2^2+2^2}+\frac{1}{2^3+1}+...+\frac{1}{2^3+2^3}+\frac{1}{2^4+1}+...+\frac{1}{2^4+2^4}+$

$+\frac{1}{2^5+1}+...+\frac{1}{2^5+2^5}+\frac{1}{2^6+1}+...+\frac{1}{2^6+2^6}>1+\frac{1}{2}+...+\frac{1}{2}=1+\frac{7}{2}$.

g) $1+\frac{1}{2}+\frac{1}{3}+...+\frac{1}{2^{4014}}>1+\frac{2007\cdot 2}{2}=1+2007=2008>2007$.