Barem de corectare AH Uman Clasa a IX-a, 2013

1) $|2x-1| \le 7 \Leftrightarrow -7 \le 2x-1 \le 7$ ..... **(2p)**

$-6 \le 2x \le 8$ ..... **(2p)**

$-3 \le x \le 4$ ..... **(2p)**

$M = \{0,1,2,3,4\}$ ..... **(1p)**

2) a) $f(-1)=2; f(2)=-3 \Rightarrow a=-\frac{5}{3}, b=\frac{1}{3}.$ .....**(2p)**

$f(\sqrt{3})=-\sqrt{3}; f(-\pi)=\pi \Rightarrow m=-1, n=0.$.....**(2p)**

b) $(f \circ f)(x)=\begin{cases} \frac{25}{9}x-\frac{2}{9}, & x \in Q \\ x, & x \in R-Q \end{cases}.$ .....**(3p)**

3) a) $a_2=\frac{3}{5}\cdot\frac{1}{5}=\frac{3}{25}, \quad a_3=\frac{4}{10}\cdot\frac{3}{25}=\frac{6}{125}, \quad a_4=\frac{5}{15}\cdot\frac{6}{125}=\frac{2}{125}$ .....**(2p)**

b) $a_2=\frac{3}{5\cdot 1}a_1, a_3=\frac{4}{5\cdot 2}a_2, \ldots, a_{n+1}=\frac{n+2}{5\cdot n}a_n.$ Prin înmulțirea relațiilor se obține:

$a_2\cdot a_3\cdot\ldots\cdot a_{n+1}=\frac{3\cdot 4\cdot\ldots\cdot(n+1)(n+2)}{5^n\cdot 2\cdot 3\cdot\ldots\cdot n}a_1\cdot a_2\cdot\ldots\cdot a_n$ .....**(2p)**

$\Rightarrow a_n=\frac{n(n+1)}{2\cdot 5^n}.$ .....**(1p)**

c) $b_n=\frac{1}{5^n}.$

$\frac{b_{n+1}}{b_n}=\frac{1}{5}=ct \Rightarrow (b_n)$ progresie geometrică. .....**(2p)**

4) a) $\overrightarrow{DE}=\overrightarrow{DB}+\overrightarrow{BE}=\frac{1}{3}\overrightarrow{AB}+\frac{1}{2}\overrightarrow{BC}=\frac{1}{2}\overrightarrow{BC}-\frac{1}{3}\overrightarrow{BA}.$ .....**(3p)**

b) $\overrightarrow{EF}=\overrightarrow{EC}+\overrightarrow{CF}=\frac{1}{2}\overrightarrow{BC}+\overrightarrow{AB}+\overrightarrow{BC}=\frac{3}{2}\overrightarrow{BC}-\overrightarrow{BA}.$ .....**(3p)**

c) $\overrightarrow{EF}=3\cdot\overrightarrow{DE} \Rightarrow D, E, F$ coliniare.....**(1p)**