

Soluție

1. a) $A = \{1^2, 2^2, \dots, 20^2\}$. 20 elemente

b) $a = \frac{1+25}{2} \cdot 13 = 13^2, a \in A$

2. $\frac{x_{n+1}}{x_n} = \frac{\frac{1}{2^{n+1}} \cdot y_{n+1}}{\frac{1}{2^n} \cdot y_n} = \frac{\frac{1}{2^n \cdot 2} \cdot y_n \cdot q}{\frac{1}{2^n} \cdot y_n} = \frac{q}{2} \cdot \frac{x_{n+1}}{x_n} = \text{constant} \Rightarrow x_n$ progresie geometrică

3.

$$x_1 = 0, x_{2k+1} = 0, \forall k \in \mathbb{N}^*$$
$$x_{2k} = \frac{2 \cdot 3^{2k}}{2k} \neq 0, \forall k \in \mathbb{N}^* \cdot P = \frac{50}{99}$$

4.

a) $2n - 1 = 0 \Rightarrow n = \frac{1}{2} \notin \mathbb{Z}$

$3m + 1 = 0 \Rightarrow m = -\frac{1}{3} \notin \mathbb{Z}$

b) $f(-x) = -x - \frac{1}{x} = -\left(x + \frac{1}{x}\right); f(-x) = -f(x) \Rightarrow$ funcția este impară