

Soluție

1. a) $\overline{ab5}; a, b \in \{5, 6\} = 555, 565, 655, 665$

b) $a_1 = 5, a_2 = 3, a_3 = 1; a_{2k} = 3, a_{2k+1} = 1, k \in \mathbb{N}^* \Rightarrow a_{15} = 1$

2. $a_1 = 6 + \sqrt{2}; a_2 = 3 + \sqrt{2}, a_3 = \sqrt{2}, a_4 = \sqrt{2} - 3$

3. $3^2 + 2^3 = 17 < 50; 4^2 + 2^4 = 32 < 50; 5^2 + 2^5 = 57 > 50, 6^2 + 2^6 = 100 > 50 \Rightarrow P = \frac{2}{4} = \frac{1}{2}$

4. a) $f(x) = \frac{x+1}{x-3} = \frac{x-3+4}{x-3} = \frac{x-3}{x-3} + \frac{4}{x-3} = 1 + \frac{4}{x-3}$

b) Fie $x \in \mathbb{R} - \mathbb{Q}$. Presupunem $f(x) \in \mathbb{Q}$. Fie $f(x) = k \in \mathbb{Q} \Rightarrow x = \frac{4}{k-1} + 3 \in \mathbb{Q}$, contradicție