

BAREM clasa a- VI-a

1. $49^n + 24 \cdot 7^n + 143 = (7^n + 11)(7^n + 13)$ 2 p
 $2 \cdot 7^n + 26 = 2 \cdot (7^n + 13)$ 3 p
 $\frac{49^n + 24 \cdot 7^n + 143}{2 \cdot 7^n + 26} = \frac{7^n + 11}{2}$ 1 p
 $7^n + 11$ este par $\Rightarrow \frac{7^n + 11}{2} \in \mathbb{N}$ 1 p

2. Fie $d = (a, b) \Rightarrow a = dx$ si $b = dy$ cu $(x, y) = 1$ 1 p
 $[a, b] = dxy$ 1 p
 Obtinem $d^2 x^2 y^2 - 792d^2 = 2017$ 1 p
 $d^2(x^2 y^2 - 792) = 2017$ 1 p
 2017 este numar prim $\Rightarrow d = 1$ si $x^2 y^2 = 2809$ 1 p
 $xy = 53 \Rightarrow x = 1$ si $y = 53$ sau $x = 53$ si $y = 1$ 1 p
 si obtinem solutile $a = 53$ si $b = 1$ sau $a = 1$ si $b = 53$ 1 p

3.
 - a) $A_1 A_2 = 4 \cdot 1, A_2 A_3 = 4 \cdot 2, A_3 A_4 = 4 \cdot 3, \dots, A_{99} A_{100} = 4 \cdot 99$ 2 p
 $A_1 A_{100} = A_1 A_2 + A_2 A_3 + \dots + A_{99} A_{100} = 4 \cdot (1 + 2 + \dots + 99) = 19800$ 3 p
 - b) *Gasirea lui i* = 70 2 p

4.
 - a) $m(\widehat{DEC}) = 90^\circ \Rightarrow \triangle DEC$ dreptunghic 2 p
 - b) $m(\hat{A}) = 16^\circ, m(\hat{B}) = m(\hat{C}) = 82^\circ$ 3 p