

CASA 1X-A
BAREM

① $(k-1)^2 < k^2 - k + 1 < k^2, k \geq 2. \quad (2p)$

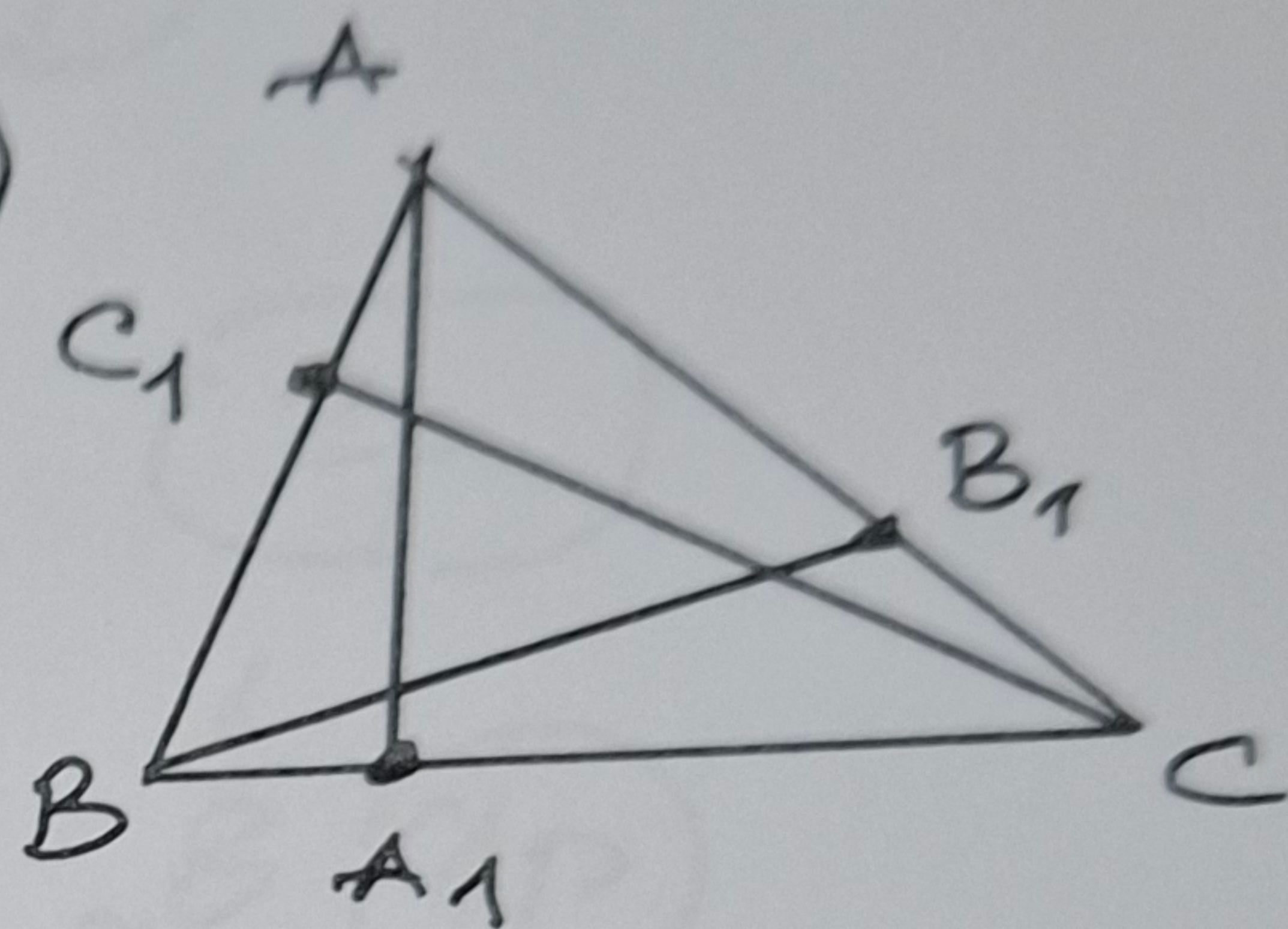
$\Rightarrow \lfloor \sqrt{k^2 - k + 1} \rfloor = k-1, k \geq 2. \quad (2p)$

$S = 1 + \sum_{k=2}^n (k-1) \quad (2p) = 1 + \frac{n(n-1)}{2} \quad (1p)$

② $\vec{AA_1} = (1-k)\vec{AB} + k\vec{AC}$ etc $(2p)$

$\sum \vec{AA_1} = \sum \{(1-k)\vec{AB} + k\vec{AC}\} \quad (2p)$

$= \vec{0} \quad (2p)$ Concluzie $(1p)$

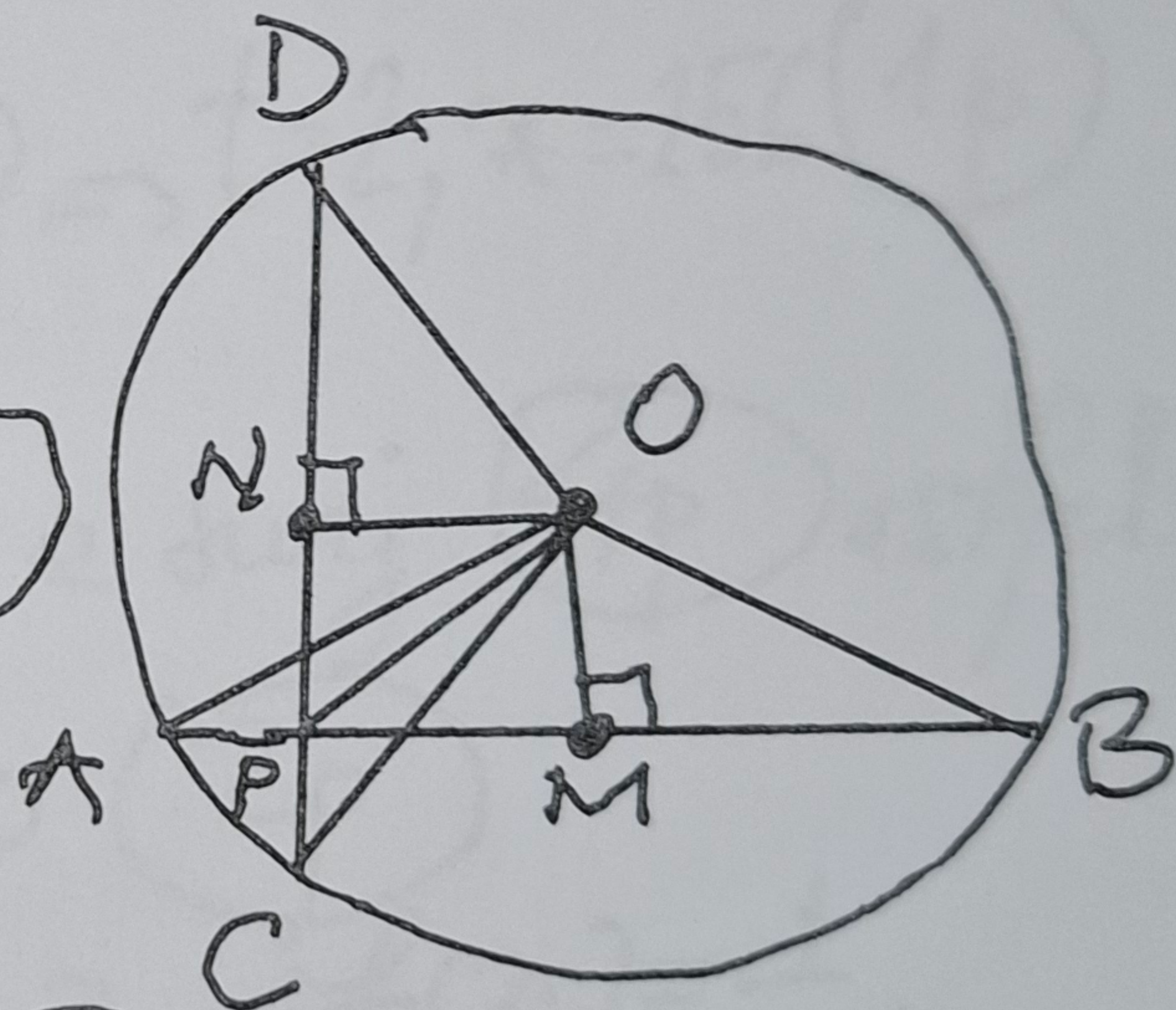


③ $\vec{OA} + \vec{OB} = 2\vec{OM} \quad (2p)$

$\vec{OC} + \vec{OD} = 2\vec{ON} \quad (2p)$

OMPQ dr $\Rightarrow \vec{OM} + \vec{ON} = \vec{OP} \quad (2p)$

Finalizare $(1p)$



④ $n^2(n+9)(n+16)(n+25) \quad (1p)$

$(n^4 + 25n^2)(n^4 + 25n^2 + 144) \quad (2p) \quad t = n^4 + 25n^2$

$t(t+144) < (t+72)^2 \Rightarrow t(t+144) \leq (t+71)^2 \quad (1p)$

$\Rightarrow t \leq 2520 \quad (1p) \Rightarrow n \leq 6 \quad (1p)$

$n=0$ sol. unică $(1p)$