Barem de corectare OLM Clasa a VI-a, 2014

1. $(a, b) = 28$ rezultă $a = 28x$ și $b = 28y$, $(x, y) = 1$ .....**(1p)**

$a \cdot b = 32928$, rezultă $28x \cdot 28y = 32928$ .....**(1p)**

Deci $xy = 42$ .....**(2p)**

Cum $a, b < 200$, rezultă $x, y \leq 7$.....**(1p)**

Deci singurele soluții sunt $x = 6$, $y = 7$ și atunci $a = 168$ și $b = 196$ .....**(1p)**

Sau $x = 7$, $y = 6$ și atunci $a = 196$ și $b = 168$ .....**(1p)**

2. a) Calculul corect al diferenței .....**(2p)**

Stabilirea valorii de adevăr a propoziției date .....**(1p)**

b) Notând suma din membrul stâng cu S avem

$11S = \frac{12-1}{1\cdot 12} + \frac{23-12}{12\cdot 23} + \frac{34-23}{23\cdot 34} + \cdots + \frac{2014-2003}{2003\cdot 2014} =$ ..... **(1p)**

$= 1 - \frac{1}{12} + \frac{1}{12} - \frac{1}{23} + \frac{1}{23} - \frac{1}{34} + \cdots + \frac{1}{2003} - \frac{1}{2014} =$..... **(1p)**

$= 1 - \frac{1}{2014}$..... **(1p)**

$11S < 1 \Rightarrow S < \frac{1}{11}$..... **(1p)**

3. a) $A_0A_1 = 3 = 4 \cdot 0 + 3$, $A_1A_2 = 7 = 4 \cdot 1 + 3$, $A_2A_3 = 11 = 4 \cdot 2 + 3$,

deci $A_9A_{10} = = 4 \cdot 9 + 3 = 39$ .....**(1p)**

$A_0M = A_0A_{10} : 2 = (3 + 7 + ... + 39) : 2 = 105$ .....**(2p)**

b) $A_0A_{2014} = A_0A_1 + A_1A_2 + ... + A_{2013}A_{2014} = (4 \cdot 0 + 3) + (4 \cdot 1 + 3) + (4 \cdot 2 + 3) + \ldots +$

$(4 \cdot 2013 + 3) =$ .....**(1p)**

= $4 \cdot (1 + 2 + ... + 2013) + 2014 \cdot 3 = 4 \cdot 2013 \cdot 2014 : 2 + 2014 \cdot 3 =$.....**(2p)**

$= 2014 \cdot 4029 = 8114406$.....**(1p)**

4. a) Figura.....**(1p)**

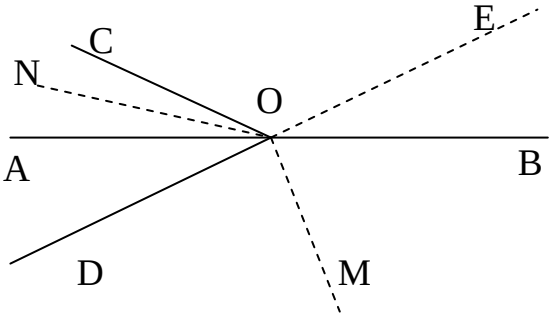
$m(\sphericalangle MON) = (m(\sphericalangle MOD) + m(\sphericalangle DOA) + m(\sphericalangle AON) =$

$= m(\sphericalangle BOD) : 2 + m(\sphericalangle DOA) + m(\sphericalangle AOC) : 2 =$

$= (m(\sphericalangle BOD) + 2\, m(\sphericalangle DOA) + m(\sphericalangle AOC)) : 2 =$

$= (m(\sphericalangle BOA) + m(\sphericalangle DOC)) : 2 =$

$= (180^o + 80^o) : 2 = 130^o$.....**(3p)**



b) $m(\sphericalangle BOD) = 360^o - [m(\sphericalangle COD) + m(\sphericalangle BOC)] =$

$= 360^o - [80^o + 140^o15'30'']$ =

$= 139^o44'30''$.....**(2p)**

$m(\sphericalangle BOE) = m(\sphericalangle DOE) - m(\sphericalangle BOD) =$

$= 180^o - 139^o44'30'' = 40^o15'30''$ .....**(1p)**