OLIMPIADA DE MATEMATICĂ A SATELOR DIN ROMÂNIA

BAREM CORECTARE - ETAPA LOCALĂ

CLASA a VIII-a 21.02.2020

Problema 1. (7 puncte)

$a = 4$ ..... **(3p)**

$b = 7 - 2\sqrt{5}$ ..... **(3p)**

$b < a$ ..... **(1p)**

Problema 2. (7 puncte)

$\sqrt{9x^2 + 36x + 36} = 3|x + 2|$ ..... **(2p)**

$\sqrt{9x^2 + 36x + 36} - |4 + 2x| = 3|x + 2| - 2|x + 2| = |x + 2|$ ..... **(1p)**

$\sqrt{y^2 - 6y + 9} = |y - 3|$ ..... **(1p)**

$\sqrt{9x^2 + 36x + 36} - |4 + 2x| + \sqrt{y^2 - 6y + 9} = |x + 2| + |y - 3| = 0$ ..... **(1p)**

$x = -2; y = 3;$ ..... **(1p)**

$(x - y) = -5 \in \left[-\frac{39}{7}; -\frac{3}{2}\right]$ ..... **(1p)**

Problema 3. (7 puncte)

Desen corect ..... **(1p)**

a) $\left.\begin{matrix} DB \perp AC \\ DB \perp AA' \end{matrix}\right\} \Rightarrow DB \perp (A'AC)$ ..... **(2p)**

b) NO linie mijlocie în $\Delta BDD' \Rightarrow NO \parallel BD'$ ..... **(1p)**

$\left.\begin{matrix} NO \parallel BD' \\ BD' \subset (D'BC) \end{matrix}\right\} \Rightarrow NO \parallel (D'BC)$ ..... **(1p)**

c) $BC' \parallel AD' \Rightarrow m\sphericalangle(D'O, BC') = m\sphericalangle(AD'O)$ ..... **(1p)**

$\left.\begin{matrix} \Delta AD'C \text{ echilateral} \\ \text{O mijlocul lui AC} \end{matrix}\right\} \Rightarrow m\sphericalangle(AD'O) = 30°$ ..... **(1p)**

Problema 4. (7 puncte)

a) $CD = 16\ cm$ ..... **(2p)**

b)) $\left.\begin{matrix} ME \perp (ABC) \\ EP \perp AC \end{matrix}\right\} \Rightarrow MP \perp AC \Rightarrow d(M, AC) = MP$ ..... **(1p)**

$EP = \frac{24}{5}\ cm$ ..... **(1p)**

$MP = \frac{6\sqrt{41}}{5}\ cm$ ..... **(1p)**

c) $\left.\begin{matrix} EP \perp AC \\ MP \perp AC \\ ET \perp MP \end{matrix}\right\} \Rightarrow ET \perp (MAC) \Rightarrow d(E, (MAC)) = ET$ ..... **(1p)**

$ET = \frac{24\sqrt{41}}{41}\ cm$ ..... **(1p)**

„Binele ce-l faci la oarecine, ţi-l întoarce vremea care vine”

Anton Pann

Felicitări!