

A-H Clasa a IX-a
Barem de corectare și notare
Subiectul 1

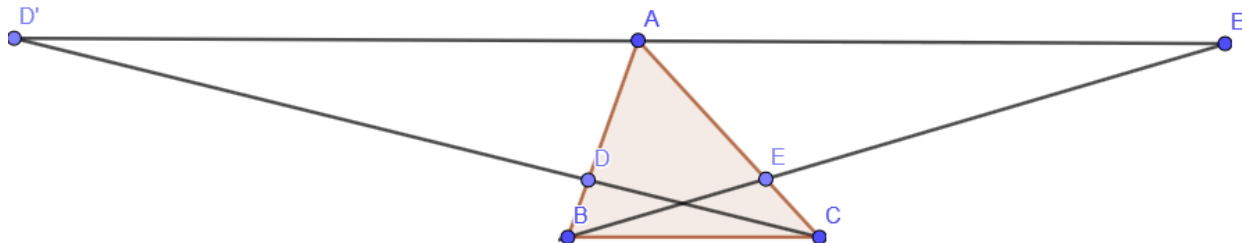
| | |
|---|-----------|
| a) $1 + 3 + 5 + \dots + (2 \cdot 5 - 1) = 25$ | 2p |
| b) Se demonstrează folosind metoda inducției matematice | 3p |
| c) $n^2 \geq 10000 \Rightarrow n = 100$ | 2p |

Subiectul 2

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|--|-----------|
| a) $8 + \frac{8}{2} + \frac{8}{2} = 16m$ | 2p |
| b) $8 + 2 \cdot \frac{8}{2} + 2 \cdot \frac{8}{4} + 2 \cdot \frac{8}{8} + \dots + 2 \cdot \frac{8}{2^{100}} = 8 + 16 \left(\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \dots + \frac{1}{2^{100}} \right) =$ | 2p |
| $= 8 + 16 \cdot \frac{2^{99} + 2^{98} + \dots + 1}{2^{100}} = 8 + 16 \cdot \frac{2^{100} - 1}{2^{100}} = 8 + 16 - \frac{16}{2^{100}} = 24 - \frac{16}{2^{100}} < 24$ | 3p |

Subiectul 3

| | |
|--|-----------|
| a) $\frac{1}{(5k+1)(5k+6)} = \frac{1}{5} \left(\frac{1}{5k+1} - \frac{1}{5k+6} \right)$ | 2p |
| b) $\frac{1}{1 \cdot 6} + \frac{1}{6 \cdot 11} + \dots + \frac{1}{(5n+1)(5n+6)} =$ | 2p |
| $= \frac{1}{5} \left(\frac{1}{1} - \frac{1}{6} + \frac{1}{6} - \frac{1}{11} + \dots + \frac{1}{5n+1} - \frac{1}{5n+6} + \frac{1}{5n+6} - \frac{1}{5n+11} \right) =$ | |
| $= \frac{1}{5} \left(1 - \frac{1}{5n+6} \right) = \frac{n+1}{5n+6} < \frac{1}{5}$ | 3p |

Subiectul 4


| | |
|---|-----------|
| $\Delta ADD': \overrightarrow{AD'} = \overrightarrow{AD} + \overrightarrow{DD'} = \frac{3}{4} \overrightarrow{AB} + 3\overrightarrow{CD} = 3(\overrightarrow{DB} + \overrightarrow{CD}) = 3\overrightarrow{CB}$ | 3p |
| $\Delta AEE': \overrightarrow{AE'} = \overrightarrow{AE} + \overrightarrow{EE'} = \frac{3}{4} \overrightarrow{AC} + 3\overrightarrow{BE} = 3(\overrightarrow{EC} + \overrightarrow{BE}) = 3\overrightarrow{BC}$ | 3p |
| $\Rightarrow \overrightarrow{AD'} = -\overrightarrow{AE'} \Rightarrow \overrightarrow{AD'}, \overrightarrow{AE'}$ coliniari \Rightarrow punctele D', A, E' coliniare | 1p |