

Numele si prenumele.....

Test numere complexe

1. Calculati: $\frac{(1+i)^2}{1-i} + \frac{(1-i)^2}{1+i}$ (0,5p)
2. Determinati $\operatorname{Re} z, \operatorname{Im} z, \bar{z}, |z|$ pentru numarul complex, $z = \frac{1}{2-\sqrt{3}i}$ (2p)
3. Calculati :
 - a) $\frac{1}{i^{25}} - \frac{1}{i^{54}} - \frac{1}{(-i)^{10}} + \frac{1}{i^{75}} + \frac{2}{(-i)^{102}}$ (0,75p)
 - b) $i \cdot i^2 \cdot i^3 \cdot \dots \cdot i^{2010}$ (0,75p)
4. Sa se determine numerele reale x, y daca : $\overline{3x-4i} + 6x - 2y = 2(\overline{4i-x+7}) + 3yi$ (1p)
5. Sa se rezolve ecuatiile:
 - a) $|z| - z = 3 + i$ (1p)
 - b) $z^2 = 1 - \frac{3}{4}i$ (1p)
6. Aratati ca numarul $z = (2-i)^{2013} + (-2-i)^{2013} \in \square$ (1p)
7. Sa se arate ca daca $z_1, z_2 \in \square, z_1 \neq z_2$, atunci numarul $Z = z_1 \bar{z_2} - \bar{z_1} z_2 \in \square / \square$ (1p)