

Barem de corectare CMAA a X-a Filiera teoretică - Uman 2017

1) a) $f(-x) = f(x), \forall x \in R$ (2p)

b) $f\left(\frac{1}{2}\right) = \frac{3\sqrt{2}}{2} \Rightarrow A \in G_f$ (1p)

$f(\log_2 3) = \frac{10}{3} \Rightarrow B \in G_f$ (1p)

$f(2017) \neq \frac{1}{2017} \Rightarrow C \notin G_f$ (1p)

c) $2^{\sqrt{x}} = 4, x = 4$ (1p)

$2^{\sqrt{x}} = \frac{1}{4}$ nu are soluție (1p)

2) a) $x^3 + y^3 = (x+y)^3 - 3xy(x+y) = 64 - 12 = 52$ (1p)

Reciproc $x^3 + y^3 = (x+y)^3 - 3xy(x+y) = 52$, notăm

$x+y=t \Rightarrow t^3 - 3t - 52 = 0 \Leftrightarrow (t-4)(t^2 + 4t + 13) = 0 \Leftrightarrow t = 4$ (2p)

b) Numărul $A = \sqrt[3]{26+15\sqrt{3}} + \sqrt[3]{26-15\sqrt{3}}$ este soluție a ecuației $t^3 - 3t - 52 = 0 \Rightarrow A = 4$ (4p)

3) $b^2 = ac$ (2p)

$\log_x b^2 = \log_x ac \Rightarrow 2\log_x b = \log_x a + \log_x c$ (2p)

concluzia (3p)

4) $q^n = \frac{S}{E} \Rightarrow n = \frac{\lg \frac{S}{E}}{\lg q}$ (4p)

$n = \frac{\lg 10}{\lg 1,78} \approx \frac{1}{0,25} = 4$ (3p)