

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

a) $x = 0 \Rightarrow f(0) = 2750 + 180 \cdot \log_3 1 = 2750$	<b>3p</b>
b) $x = 80000 \Rightarrow f(80000) = 2750 + 180 \cdot \log_3 \left( \frac{80000}{1000} + 1 \right) = 2750 + 180 \cdot \log_3 81 = 3470$	<b>4p</b>

**Subiectul 2**

$\frac{a - (a \cdot b)^{\frac{1}{2}} + b}{a - b} - 2(a \cdot b)^{\frac{1}{2}} = \frac{(\sqrt{a})^3 + (\sqrt{b})^3}{\sqrt{a} - \sqrt{b}} \cdot \frac{a - b}{a - \sqrt{ab} + b} - 2\sqrt{ab}$	<b>2p</b>
$= \frac{(\sqrt{a} + \sqrt{b})(a - \sqrt{a}\sqrt{b} + b)}{(\sqrt{a} - \sqrt{b})} \cdot \frac{(\sqrt{a} - \sqrt{b})(\sqrt{a} + \sqrt{b})}{a - \sqrt{a}\sqrt{b} + b} - 2\sqrt{a}\sqrt{b}$	<b>2p</b>
$= (\sqrt{a} + \sqrt{b})^2 - 2\sqrt{a}\sqrt{b} = a + b; a + b = 5 + 2\sqrt{3} + 5 - 2\sqrt{3} = 10$	<b>3p</b>

**Subiectul 3**

$z = a + bi, \bar{z} = a - bi, a, b \in \mathbb{R}$	<b>2p</b>
$\operatorname{Re}\left(2i \bar{z}\right) = \operatorname{Re}\left(2i \cdot (a - bi)\right) = \operatorname{Re}(2b + 2ai) = 2b$	<b>2p</b>
$\left (z - 3i)^2\right  =  a + bi - 3i ^2 = a^2 + (b - 3)^2, \left (z - 2i)^2\right  = a^2 + (b - 2)^2$	<b>2p</b>
$2b + a^2 + (b - 3)^2 - a^2 - (b - 2)^2 = 5$	<b>1p</b>

**Subiectul 4**

a) $E = \frac{3-1}{3-1} \cdot (3+1)(3^2+1) \cdot (3^4+1) \cdot \dots \cdot (3^{32}+1)$	<b>2p</b>
$= \frac{3^{64}-1}{2}$	<b>2p</b>
b) $\sqrt[3]{\frac{2E+1}{3}} = \sqrt[3]{3^{63}} = 3^{21} = (3^7)^3$	<b>3p</b>