Language: **Georgian**

Day: **1**

oTxSabaTi, 7 ivlisi, 2010

amocana 1. ipoveT yvela iseTi $f:\mathbb{R}\to\mathbb{R}$ funqcia, romlisTvisac

$$f\big([x]y\big)=f(x)\big[f(y)\big]$$

toloba srulideba yoveli $x,y\in\mathbb{R}$ ricxvebisTvis. (aq $[z]$ aRniSnavs udides mTel ricxvs, romelic naklebia an toli z-is.)

amocana 2. vTqvaT, I aris ABC samkuTxedSi Caxazuli wrewiris centri, xolo Γ ki ABC samkuTxedze Semoxazuli wrewiri. vTqvaT, AI wrfe kidev erTxel kveTs Γ wrewirs D wertilSi. vTqvaT, E wertili aRebulia BDC rkalze, xolo F wertili BC gverdze ise, rom

$$\angle BAF=\angle CAE<\frac{1}{2}\angle BAC.$$

da bolos vTqvaT, G aris IF FmonakveTis Sua wertili. daamtkiceT, rom DG da EI wrfeebis gadakveTis wertili mdebareobs Γ wrewirze.

amocana 3. vTqvaT, $\mathbb{N}$ aris naturalur ricxvTa simravle. ipoveT yvela iseTi $g:\mathbb{N}\to\mathbb{N}$ funqcia, rom

$$\big(g(m)+n\big)\big(m+g(n)\big)$$

iyos sruli kvadrati yoveli $m,n\in\mathbb{N}$ ricxvebisaTvis.

language: Georgian

samuSao dro: 4sT da 30 wT
TiToeuli amocana fasdeba 7 quliT

xuTSabaTi, 8 ivlisi, 2010

amocana 4. vTqvaT, P wertili mdebareobs ABC samkuTxedis SigniT. AP, BP da CP wrfeebi ABC samkuTxedze Semoxazul Γ wrewirs kidev erTxel kveTen, Sesabamisad, K, L da M wertilebSi. Γ wrewirisadmi C wertilSi gavlebuli mxebi AB wrfes kveTs S wertilSi. vTqvaT, $SC = SP$. daamtkiceT, rom $MK = ML$.

amocana 5. mocemulia eqvsi yuTi B_1, B_2, B_3, B_4, B_5, B_6. TiToeul maTganSi Tavdapirvelad aris TiTo moneta. nebadarTulia Semdegi ori tipis operacia:

tipi 1: virCevT nebismier aracariel B_j yuTs, sadac $1 \le j \le 5$ da misgan amovagdebT erT monetas, xolo B_{j+1} yuTSi vamatebT or monetas.

tipi 2: virCevT nebismier aracariel B_k yuTs, sadac $1 \le k \le 4$, misgan amovagdebT erT monetas da vucvliT adgilebs B_{k+1} da B_{k+2} yuTebis (SesaZloa carieli) SigTavsebs.

arsebobs Tu ara operaciaTa iseTi sasruli mimdevroba, romlis Sedegad B_1, B_2, B_3, B_4, B_5 yuTebi aRmoCndeba carieli, xolo B_6 yuTSi iqneba zustad $2010^{2010^{2010}}$ moneta. (gansazRvrebis Tanaxmad $a^{b^c} = a^{\left(b^c\right)}$)

amocana 6. vTqvaT, a_1, a_2, a_3, ... aris dadebiTi namdvili ricxvebis mimdevroba. vTqvaT, arsebobs iseTi naturaluri ricxvi s, rom

$$a_n = \max\left\{a_k + a_{n-k} \,|\, 1 \le k \le n-1\right\}$$

toloba sruldeba yoveli $n > s$ naturaluri ricxvisTvis.

daamtkiceT, rom iarsebebs iseTi naturaluri ricxvebi l da N, sadac $l \le s$, rom $a_n = a_l + a_{n-l}$ toloba Sesruldeba yoveli $n \ge N$ naturaluri ricxvebisTvis.

language: Georgian

samuSao dro: 4sT da 30 wT
TiToeuli amocana fasdeba 7 quliT