Problem 5. «A Greek cipher»

To encrypt the three-letter message we did the following. We matched each letter with it's numeric equivalent according to the table, and got p_1, p_2, p_3.

0	1	2	3	4	5	6	7	8	9
␣	A	B	C	D	E	F	G	H	I
10	11	12	13	14	15	16	17	18	19
J	K	L	M	N	O	P	Q	R	S
20	21	22	23	24	25	26			
T	U	V	W	X	Y	Z			

Then we chose secret natural number δ and formed $p_4 = p_1 + p_2 + p_3 + \delta$.

After that we chose another secret natural number α and calculated for $i = 1, 2, 3, 4$

$$c_i = p_i + 2p_{i+1} + (-1)^{\frac{i+1}{2}} \cdot \delta \bmod 27, \text{ if } i \text{ is odd,}$$

$$c_i = p_{i-1} + p_i + (-1)^{\frac{i}{2}} \cdot \alpha \bmod 27, \text{ if } i \text{ is even.}$$

As a result we have got: «WGAD». Recover the secret message.