Хтусикова Катя

Вар 20

1 ФЦТА

2 Ф:010, Х:100, Ц:11, Ч:0110, Ш:101, Щ:0111
                                    Ъ:00

3 182

4 (3, 2, 4)

N1

$e = 3 \quad m = 55 \quad (33, 10, 25, 8)$

1) $de = 1 \bmod \varphi(m)$

$\varphi(55) = \varphi(5) \cdot \varphi(11) = 40$

$3d = 1 \bmod 40$

$3d + 40y = 1 \qquad d = -13 \bmod 40 = 27$

2) $a_i^d \bmod m$

$a = \{33, 10, 25, 8\}$

$33^{27} \bmod 55 = 22$

$10^{27} \bmod 55 = 10$

$25^{27} \bmod 55 = 20$

$8^{27} \bmod 55 = 2$

$\begin{pmatrix} 22, & 10, & 20, & 2 \\ \varphi & 4 & т & A \end{pmatrix}$

N2.

$\varphi : 41 \quad X : 44 \quad Ц : 93 \quad Ч : 16 \quad Ш : 45 \quad Щ : 27 \quad Ъ : 56$

Ц(93) Ъ(56) Ш(45) X(44) φ(41) Щ(27) Ч(16)

Ц(93) Ъ(56) Ш(45) X(44) ЩЧ(43) φ(41)

Ц(93) ЩЧ φ(84) Ъ(56) Ш(45) X(44)

ШX(99) Ц(93) ЩЧ φ(84) Ъ(56)

ШX φ Ъ(140) ШX(99) Ц(93)

ШXЦ(192) ЩЧ φ Ъ(140)

      0

ШXЦ(0) ШXЧ(1)

ШX φ Ъ(0) ШX(10) Ц(11)

ШXЧ φ(10) Ъ(00) ШX(10) Ц(11)

Ш φ(101) Ъ(00) Ш(101) X(100) Ц(11)

ШЧ(011) φ(010) Ъ(00) Ш(101) X(100) Ц(11)

Щ(0111) Ч(0110) φ(010) Ъ(00) Ш(101) X(100) Ц(11)

$\varphi : 010 ; \quad X : 100 ; \quad Ц : 11 ; \quad Ч : 0110 ; \quad Ш : 101 ; \quad Щ : 0111 ;$

$Ъ : 00$

N3:   1 1 1 0 1 1 0 1
        0 1 2 3 4 5 6 7

0: 1
1: 1+1=0
2: 1+1+1=1
3: 1+1+1+0=1
4: 1+1+1+0+1=0
5: 1+1+1+0+1+1=1
6: 1+1+1+0+1+1+0=1
7: 1+1+1+0+1+1+0+1=0

$\underset{128}{1}\,0\,\underset{32}{1}\,\underset{16}{1}\,0\,\underset{4}{1}\,\underset{2}{1}\,0_2 = 182_{10}$

N4.   3 $\mathbb{Z}_5$ 10 (от 0 до 4): 3, 4, 1, 0, 0

p(x) - иск. искл. $\deg \le 2$

$\hat{p}(x)$ - фальш. многочл. $\deg \le 4$

x	y
0	3	0
1	4	2
2	1	1 (3)
3	0	0
4	0	1

D(x) - ошибка

$D(x) \underset{5}{\equiv} 0 \iff p(x) \underset{5}{\equiv} \hat{p}(x)$

x - d

$\forall x \; D(x) \, p(x) \underset{5}{\equiv} D(x) \, \hat{p}(x)$

$\underset{\deg = 3}{\underbrace{\quad}}$ $\underset{\deg = 5}{\underbrace{\quad}}$

$\overset{Q(x)}{q_0 + q_1 x + q_2 x^2 + q_3 x^3}$

(0) $x \equiv 0$ $q_0 \equiv -d \cdot 3$

(1) $x \equiv 1$ $q_0 + q_1 + q_2 + q_3 \equiv (1-d) \cdot 4$

(2) $x \equiv 2$ $q_0 + 2q_1 + 4q_2 + 3q_3 \equiv (2-d) \cdot 1$

(3) $x \equiv -2$ $q_0 - 2q_1 + 4q_2 - 3q_3 \equiv (-2-d) \cdot 0$

(4) $x \equiv -1$ $q_0 - q_1 + q_2 - q_3 \equiv (-1-d) \cdot 0$

$(1)+(4) = 2q_0 + 2q_2 = 0 \Rightarrow a_2 = -q_0 = 3d$

$(1)-(4): 2q_1 + 2q_3 = 0 \Rightarrow a_3 = -a_1 = -3 = 2$

$(2): -3d + 2q_1 + 12d - 3q_1 = 2 - d \quad 10d = a_1 + 2$

$(3): -2d - 4 + 8d + 6 = -2 - d \qquad a_1 = -10 = 2$

$-2d + 12d = 0$

$10d = 0$

$$\begin{array}{ccc|cc}
a_1 & a_2 & a_3 & d \\
1 & 1 & 1 & 4 & 4 \\
-2 & 4 & 3 & 1 & 200 \\
-2 & 4 & -3 & 0 & 00 \\
-1 & 1 & -1 & 0 & 0
\end{array}$$

$4x^2 + 3x$

$q_1 = -\frac{2}{15}$
$q_2 = 2/15$
$q_3 = 4/15$
$d = 14/15$

$\boxed{\begin{array}{c} x_1 = -2 \\ x_2 = 6. \end{array}}$

$\frac{2}{15}x + \frac{2}{15}x^2 + \frac{4}{15}x^3$

$\boxed{\frac{-7}{2}}$

$\dfrac{-12}{36}$

$\begin{array}{l} 4x^3 + 2x^2 + 2x \\ 4x^3 + 4x^2 \end{array}$

$\dfrac{x+1}{4x^2 + 3x}$

$\begin{array}{l} 3x^2 - 2x \\ 3x^2 + 3x \end{array}$

$2x + 3x$

$\overline{\quad 0 \quad}$

$\dfrac{x^2}{2} = -3.5$

$= 7.5$

-0.5

$d = 5$

$1x^2 + 1x = 4$
$4x^2 + 2x = 1$
$9x^2 + 3x = 9$
$16x^2 + 4x = 2$

$(3, 2, 4)$

$x = 9$

$1x + 1y = 4$
$4x + 2y = 1$
$9x + 3y = 0$
$16x + 4y = 0$

(ЖДИВ).