

Меню, УДЗ 1 и управление:
Бар 22

N	ОТВ
3	8700 4
4	23
10	$5X^2 + 4X + 5$

1) 10) 0.5

$$3) X \equiv 5 \pmod{11}$$

$$X \equiv 18 \pmod{31}$$

$$X \equiv 10 \pmod{18}$$

$$X \equiv 4 \pmod{29}$$

$$10) M = 11 \cdot 31 \cdot 18 \cdot 29 = 178002$$

$$3) M_1 = 18 \cdot 31 \cdot 29 = 16182$$

$$8x) M_2 = 11 \cdot 18 \cdot 29 = 5742$$

$$M_3 = 11 \cdot 31 \cdot 29 = 9889$$

$$M_4 = 11 \cdot 31 \cdot 18 = 6138$$

$$a) 16182 X_1 \equiv 1 \pmod{11} \Rightarrow X_1 = 1 \quad \delta) 5742 X_2 \equiv 1 \pmod{31} \Rightarrow X_2 = 9$$

$$\begin{array}{r} 16182 \quad 11 \quad 1 \\ 9 \quad 1471 \quad 14 \\ X \quad 1 \quad 0 \quad 1 \end{array}$$

$$\begin{array}{r} 5742 \quad 31 \quad 7 \quad 3 \quad 1 \\ 9 \quad 185 \quad 4 \quad 2 \quad 3 \\ X \quad 1 \quad 0 \quad 1 \quad -4 \quad 9 \end{array}$$

(5x)

$$b) 9889 X_3 \equiv 1 \pmod{18} \Rightarrow X_3 = 13 \quad \Gamma) 6138 X_4 \equiv 1 \pmod{29} \quad X_4 = 26$$

$$\begin{array}{r} 9889 \quad 18 \quad 7 \quad 4 \quad 3 \quad 1 \\ 9 \quad 543 \quad 2 \quad 1 \quad 1 \quad 8 \\ X \quad 1 \quad 0 \quad 1 \quad -2 \quad 3 \quad -5 \end{array}$$

$$\begin{array}{r} 6138 \quad 29 \quad 19 \quad 10 \quad 9 \quad 1 \\ 9 \quad 241 \quad 1 \quad 1 \quad 1 \quad 9 \\ X \quad 1 \quad 0 \quad 1 \quad -1 \quad 2 \quad -3 \end{array}$$

$$X = (16182 \cdot 1 \cdot 5 + 5742 \cdot 9 \cdot 18 + 9889 \cdot 13 \cdot 10 + 6138 \cdot 4 \cdot 26)$$

$$\pmod{178002} = 87004$$

Проверка:

$$1) 87004 = 7909 \cdot 11 + 5 = 5 \pmod{11}$$

$$3) 87004 = 18 \cdot 4833 + 10 = 10 \pmod{18}$$

$$2) 87004 = 2806 \cdot 31 + 18 = 18 \pmod{31} \quad 4) 87004 = 3000 \cdot 29 + 4 = 4 \pmod{29}$$

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OFB : 87004

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$$4) 23^{43^{85}} \mod 77$$

$$k = 43^{85} \Rightarrow 23^k \mod 77$$

$$\varphi(77) = \varphi(7) \cdot \varphi(11) = 6 \cdot 10 = 60$$

$$k = 43^{85} = 60n + b$$

$$b = 43^{85} \mod 60$$

$$\varphi(60) = \varphi(4) \cdot \varphi(15) = 2 \cdot 8 = 16$$

$$b = 43^{16 \cdot 5 + 5} \mod 60 = 43^5 \mod 60$$

$$a = 43, n = 5, k = 60$$

$$S_{10} = 101_2$$

a_i	C	C^2	$C^2 a_i$	$C^2 a_i \mod k$
1	1	1	43	43
0	43	1849	1849	49
1	49	2401	103243	43

$$b = 43 \mod 60, \text{ Torga } 23^{43^{85}} \mod 77 \equiv 23 \mod 77$$

$$a = 23, n = 43, k = 77$$

$$43_{10} = 32 + 8 + 2 + 1 = 101011_2$$

a_i	C	C^2	$C^2 a_i$	$C^2 a_i \mod k$
1	1	1	23	23
0	23	529	529	67
1	67	4489	103247	67
0	67	4489	4489	23
1	23	529	12167	1
1	1	1	23	23

$$\underline{\underline{OAB: 23}}$$

$$\varphi(a) \cdot \varphi(b) \text{ Rem } a: b = 1$$

$$\varphi(p^k) = p^k \cdot (1 - \frac{1}{p})$$

$$\varphi(1) = 1$$

$$\varphi(p) = p - 1$$

$$\begin{array}{r} 5x^3 + 2x + 6 \\ - 3x^3 + 5x^2 + 2x + 6 \\ \hline -5x^2 \end{array}$$

10)

$$\begin{array}{r} 3x^5 + 3x^4 + 5x^3 + 0x^2 + 5x + 6 \\ - 3x^5 + 5x^4 + 2x^3 + 6x^2 \\ \hline \end{array} \quad \begin{array}{l} 5x^3 + 6x^2 + x + 5 \\ \hline 2x^2 + x + 5 \end{array}$$

$$\begin{array}{r} 5x^4 + 3x^3 + x^2 + 5x + 6 \\ - 5x^4 + 6x^3 + x^2 + 3x \\ \hline \end{array}$$

$$\begin{array}{r} 4x^3 + 2x + 6 \\ - 4x^3 + 2x^2 + 5x + 1 \\ \hline \end{array}$$

$$5x^2 + 4x + 5$$

$$(5x^3 + 6x^2 + x + 5)(2x^2 + x + 5) + 5x^2 + 4x + 5 = 3x^5 + 3x^4 + 5x^3 + 5x + 6$$

$$\text{ОПР: } 5x^2 + 4x + 5$$