①

	1	2	3	4	5
1	0	1			
2	1	0		1	
3			0		(1)
4		1		0	
5			(1)		0

⑤ Adyacencias de entrada

A =

	J	K	L	M	N
J	0	1	0	1	0
K	0	0	1	1	0
L	1	0	0	1	0
M	0	0	0	0	1
N	1	1	1	0	0

A^2 =

	J	K	L	M	N
J	0	0	1	1	1
K	1	0	0	1	1
L	0	1	0	1	0
M	1	1	1	0	0
N	1	1	1	3	0

$A + A^2$ =

	J	K	L	M	N	
J	0	1	1	2	1	= 5
K	1	0	1	2	1	= 5
L	1	1	0	2	1	= 5
M	1	1	1	0	1	= 4
N	2	2	2	3	0	= 9

⑥

A =

	a	b	c	d	e
a	0	1	0	1	1
b	1	0	1	0	0
c	0	1	0	1	0
d	1	0	1	0	1
e	1	0	0	1	0

A×A

	a	b	c	d	e
a	3	0	2	1	1
b	0	2	0	2	1
c	2	0	2	0	1
d	1	2	0	3	1
e	1	1	1	1	2

A×A×A

	a	b	c	d	e
a	2	5	1	6	4
b	5	0	4	1	2
c	1	4	0	5	2
d	6	1	5	2	4
e	4	2	2	4	2

⑦ $5x + 3y = 4$

$mcd(a,b) = mcd(5,3) = mcd(3,2) = mcd(2,1) = 1$

$x_0 = \dfrac{sc}{d} = \dfrac{(-1)(4)}{1} = -4$ $mcd(5,3) \mid 4$

$y_0 = \dfrac{tc}{d} = \dfrac{2 \times 4}{1} = 8$

$1 = 3 + (-1)2 = 3 + (-1)(5 + (-1)3)$

$= \underset{t}{(2)}3 + \underset{s}{(-1)}5 = 1$

$x = 3k - 4$
$y = 8 - 5k$

⑧ $18x + 33y = 639$

$mcd(18,33) = mcd(33,18) = mcd(18,15) = mcd(15,3) = 3$

$x_0 = \dfrac{2 \times 639}{3} = 426$

$3 \mid 639 \rightarrow 3 = 18 + (-1)15 = 18 + (-1)(33 - 18)$

$y_0 = \dfrac{-639}{3} = -213$

$= \underset{s}{(2)}18 + \underset{t}{(-1)}33$

$x = 426 + 11k$
$y = -213 - 6k$

⑨ $x \equiv 1 \pmod 7 \rightarrow x = 7a + 1$

$2x \equiv 2 \pmod 8$

$3x \equiv 3 \pmod 9$

② $7a + 1 \equiv 2 \pmod 8$

$7a \equiv 1 \pmod 8 \rightarrow mcd(7,8) = mcd(8,7) = mcd(7,1) = 7$

$a \equiv -1 \pmod 8$ $1 = 8 + \underset{s}{(-1)}7$

$a \equiv 7 \pmod 8$

$a = 8b + 7$

③ $7(8b+7) + 1 \equiv 3 \pmod 9$ $mcd(9,2) = mcd(2,1) = 1 = 9 + (-4)2$

$56b + 50 \equiv 3 \pmod 9$ $b \equiv -28 \pmod 9$

$2b \equiv 7 \pmod 9$ $b \equiv 9c + 8$

$\rightarrow x = 56(9c+8) + 50 = 504c + 498$

10. $3x + 1 \equiv 15x - 4 \pmod{20}$

    $-12x \equiv -5 \pmod{20}$

    $8x \equiv 15 \pmod{20} \nearrow \; mcd(20, 8) = mcd(8, 4) = 2$