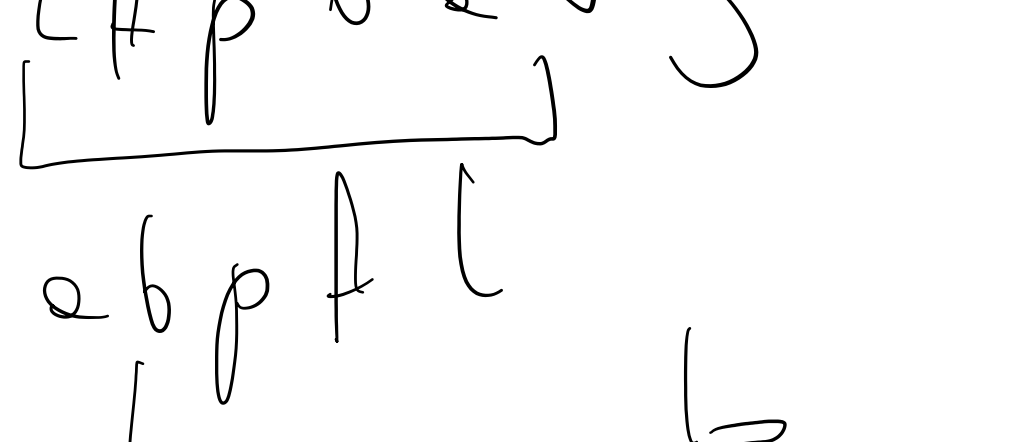


power
rewind



e b c ① a b c d e d c b a e
 b a c b a c d e
 b c | a b c a d e
 c b a b c d a e
 b c d e | a
 c b a d e
 c d a b e
 ③ c d e ~~b a~~ !
 :
 ⑤ e d c b a

① q u e r
 w e e r
 w e e r
 ② w e f o



③ e r p w
 ④ r e w p

① a b c
 b a c
 ② b c | a
 c b a

$$f(x) = 2x^2 + f_1x + f_0$$

$$g(x) = s_1x + s_0$$

$$f(x) \cdot g(x) = 2x^3 + 5x^2 + 3x + 2$$

$$f_i g_i \mid f_2 g_0 + f_1 g_1 \mid$$

$$h_k = \sum_{i+j=k} f_i g_j$$

find k s.t. $h_k \not\equiv 0$

$h_0 = f_0 g_0$ ← does not work if $f_0 \not\equiv 0$ or $g_0 \not\equiv 0$
 $h_{n+m} = f_n g_m$ ✓ we know $f_n \not\equiv 0$ or $g_m \not\equiv 0$

$$h_1 = f_0 g_1 + f_1 g_0$$

↖ ↗ doesn't work if $f_1 \not\equiv 0$ or $g_1 \not\equiv 0$

$$h_2 = f_0 g_2 + f_1 g_1 + f_2 g_0$$

$$f = \dots a_i x^i + \dots + a_1 x + a_0$$

∑ min a_i s.t. $a_i \not\equiv 0$

$$g = \dots b_j x^j + \dots + b_1 x + b_0$$

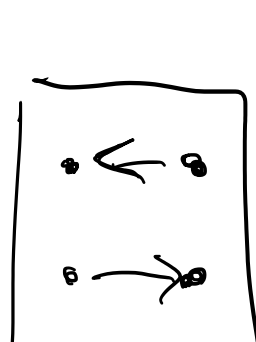
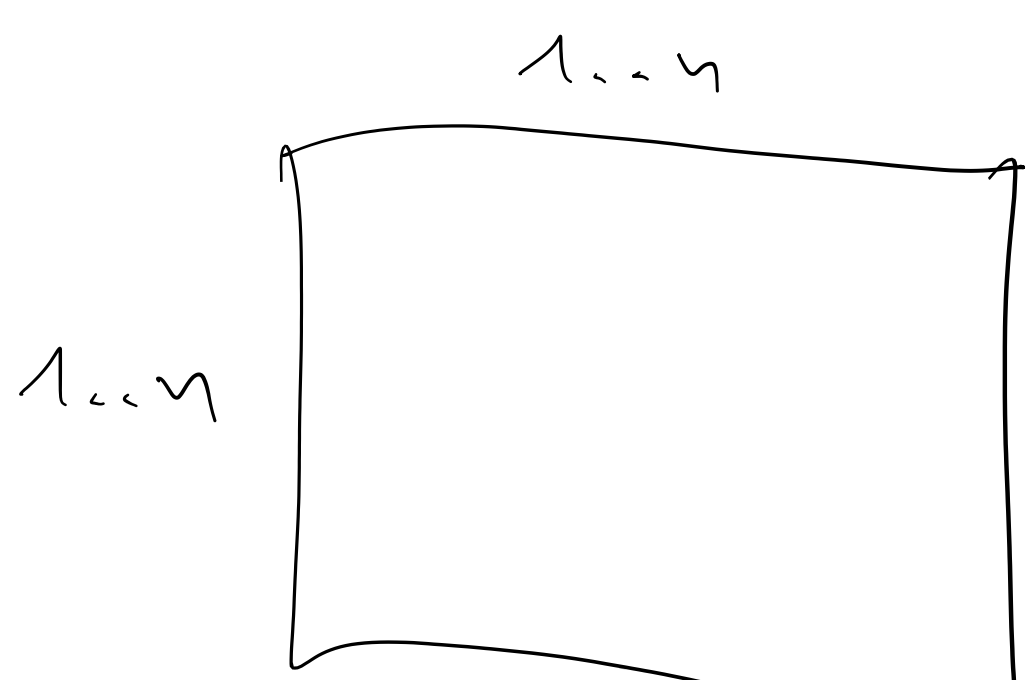
∑ min b_j s.t. $b_j \not\equiv 0$

$$h = \dots + (\dots) x^{i+j}$$

$$a^{i+j} b^0 + \dots + a^{i+1} b^{j-1} + a^i b^j + a^{i-1} b^{j+1} + \dots + a^0 b^{i+j}$$

divisible by p (min. cond.)

$a^i b^j \not\equiv 0 \pmod p$ so the sum not divisible either



$X \leftarrow$
 $\rightarrow X$

$X \ X \ X$
 $X \ \ \ X$
 $X \ X \ X$

$(-1, -1)$ must form a cycle

otherwise

$(x, y) \rightarrow$ target must be X

