

$y_0^{x_i=1} = \begin{bmatrix} 1 & 1 \\ 1 & 0 & 1 \end{bmatrix}$

$k = p * q$  (consider all  $q$ 's)

$\sum x(p) \cdot y(q)$   
# cont x's of  $p$   
of len  $p$

$p, q \leq \max(p, q)$

$3 \times 5 \quad \boxed{4}$

$\begin{matrix} 1 & 2 \\ 2 & 2 \end{matrix}$

$\overline{))(((())|}$

look at bit  
if it's set in odd # of nums  
it will be 1

$01 \quad 10$

$\boxed{3}$

$0\bar{1} \quad \bar{1}0 \quad \bar{1}\bar{1} \quad 10$

#0 \* #1 even  
both even or both odd  
 $\begin{matrix} 2-2 & 4 \\ 2-3 & 6 \\ 3-2 & 6 \\ 3-3 & \Rightarrow 8 \end{matrix}$

$0 \quad 1 \quad 1$

$\begin{matrix} 0-1 & 0-1 & 1-1 \\ 1 & 1 & 0 \end{matrix}$

$\begin{matrix} 00 & 0 \\ 01 & 1 \\ 10 & 1 \\ 11 & 0 \end{matrix}$

$\begin{matrix} 1 & 1 & 1 \\ 0 & 0 & 1 \end{matrix}$

bit decomposition doesn't work! ?

$\begin{matrix} 01 & 10 & 11 \\ \vee & \vee & \\ 11 & 01 & 10 \end{matrix}$

READ!!!  $\neq$  not  $\oplus$ !!

$(a+b) \oplus (a+c) \oplus (b+c)$

$\begin{matrix} 1 & n_0 \cdot n_1 & n \text{ numbers} \\ 0 & \frac{n(n-1)}{2} - 0 & n_0 \text{ zero} \\ & & n_1 \text{ one} \end{matrix}$

Carry  $\frac{n_1 \cdot (n_1 - 1)}{2}$