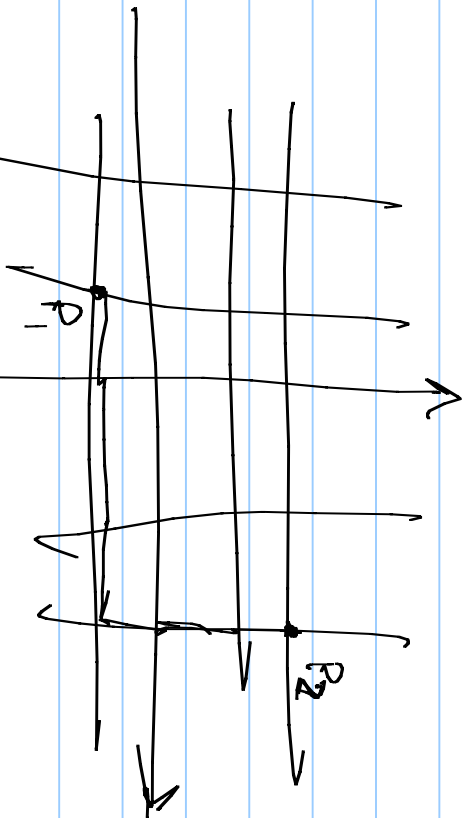


$$d_m(P_1, P_2) = |x_1 - x_2| + |y_1 - y_2|$$

$$P_1 = (x_1, y_1) \quad P_2 = (x_2, y_2)$$

Manhattan  
city block



$$(a) d_m(P_1, P_2) \geq 0 \quad \forall P_1, P_2$$

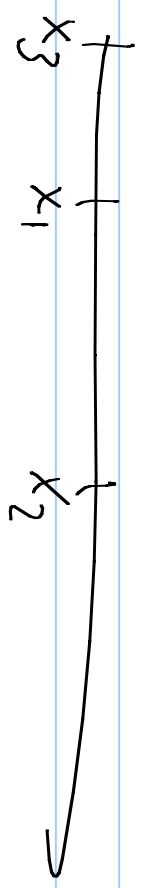
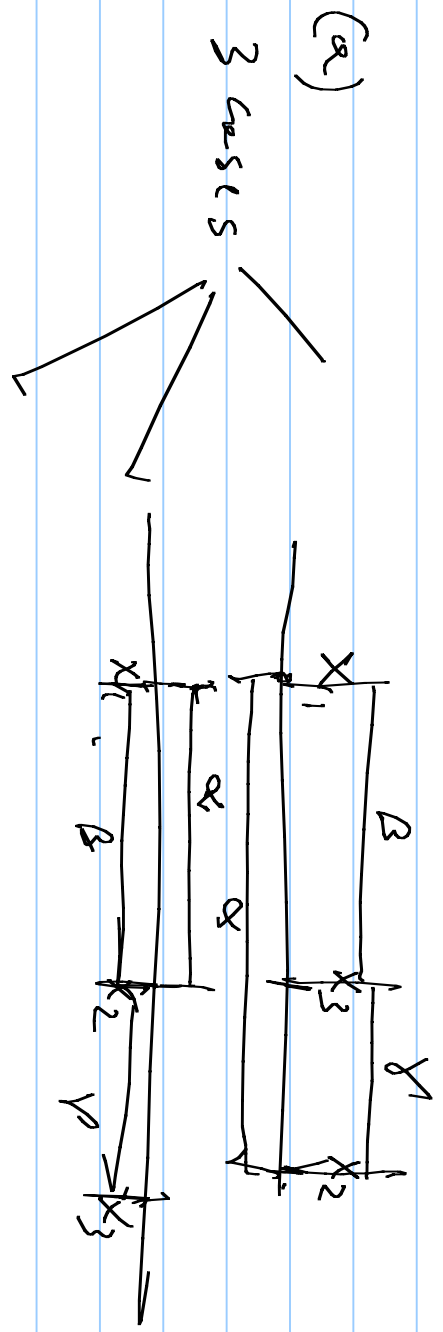
$$(b) d_m(P_1, P_2) = 0 \quad \text{iff} \\ P_1 = P_2$$

$$(2) d_m(P_1, P_2) = d_m(P_2, P_1) \quad \forall P_1, P_2$$

$$(3) \quad d_m(P_1, P_2) \leq d_m(P_1, P_3) + d_m(P_2, P_3) \quad \forall P_1, P_2, P_3$$

$$(a) \quad |x_1 - x_2| \leq |x_1 - x_3| + |x_2 - x_3|$$

$$|y_1 - y_2| \leq |y_1 - y_3| + |y_2 - y_3|$$



$$\text{Fib}_{i-2} = 0$$

$$\text{Fib}_{i-1} = 1$$

for  $i = 1$  to  $n$  do

$$\text{loc} = \text{Fib}_{i-1}$$

$$\text{Fib}_i = \text{Fib}_{i-1} + \text{Fib}_{i-2}$$

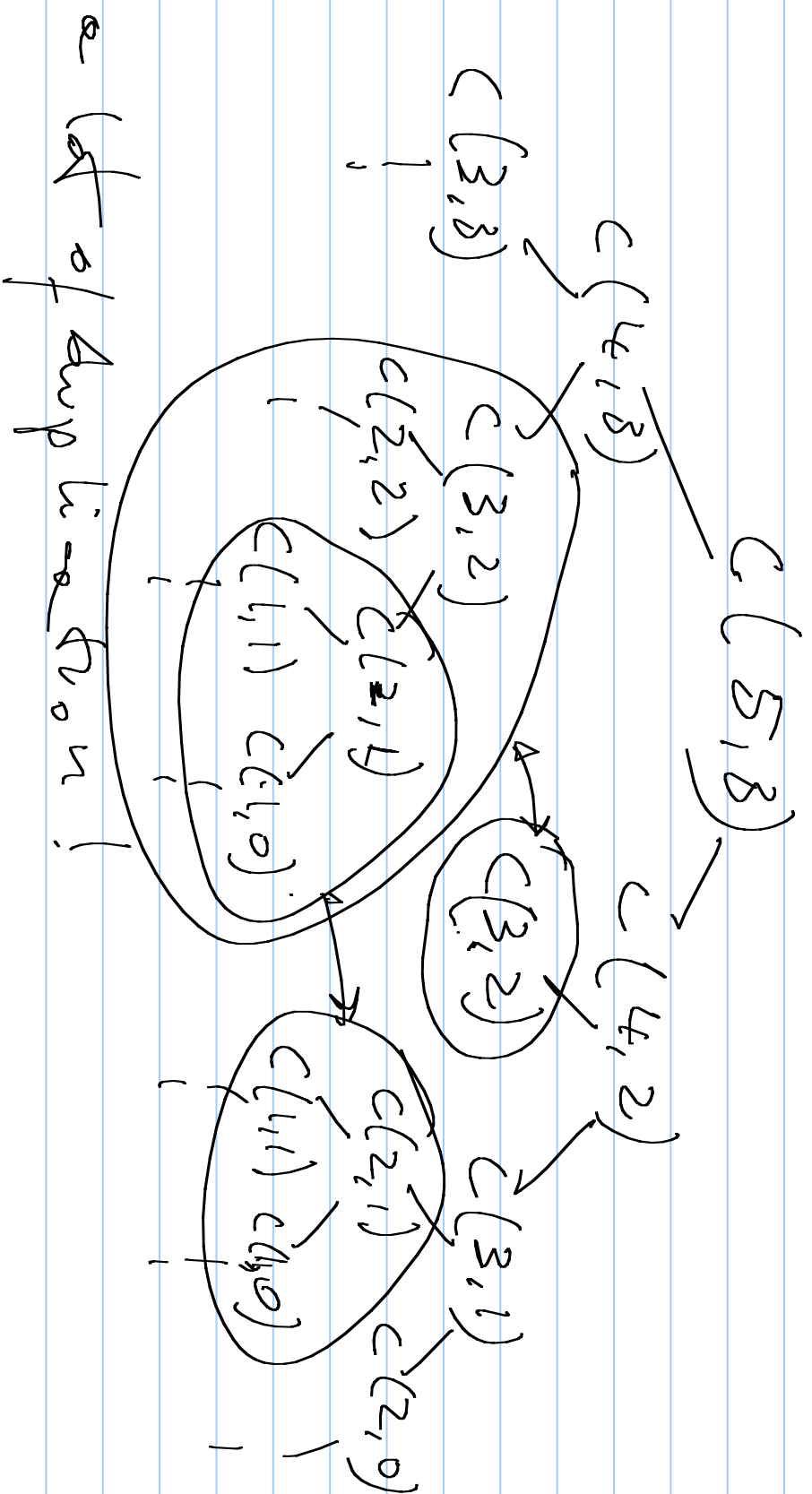
$$\text{Fib}_{i-2} = \text{Fib}_{i-1}$$

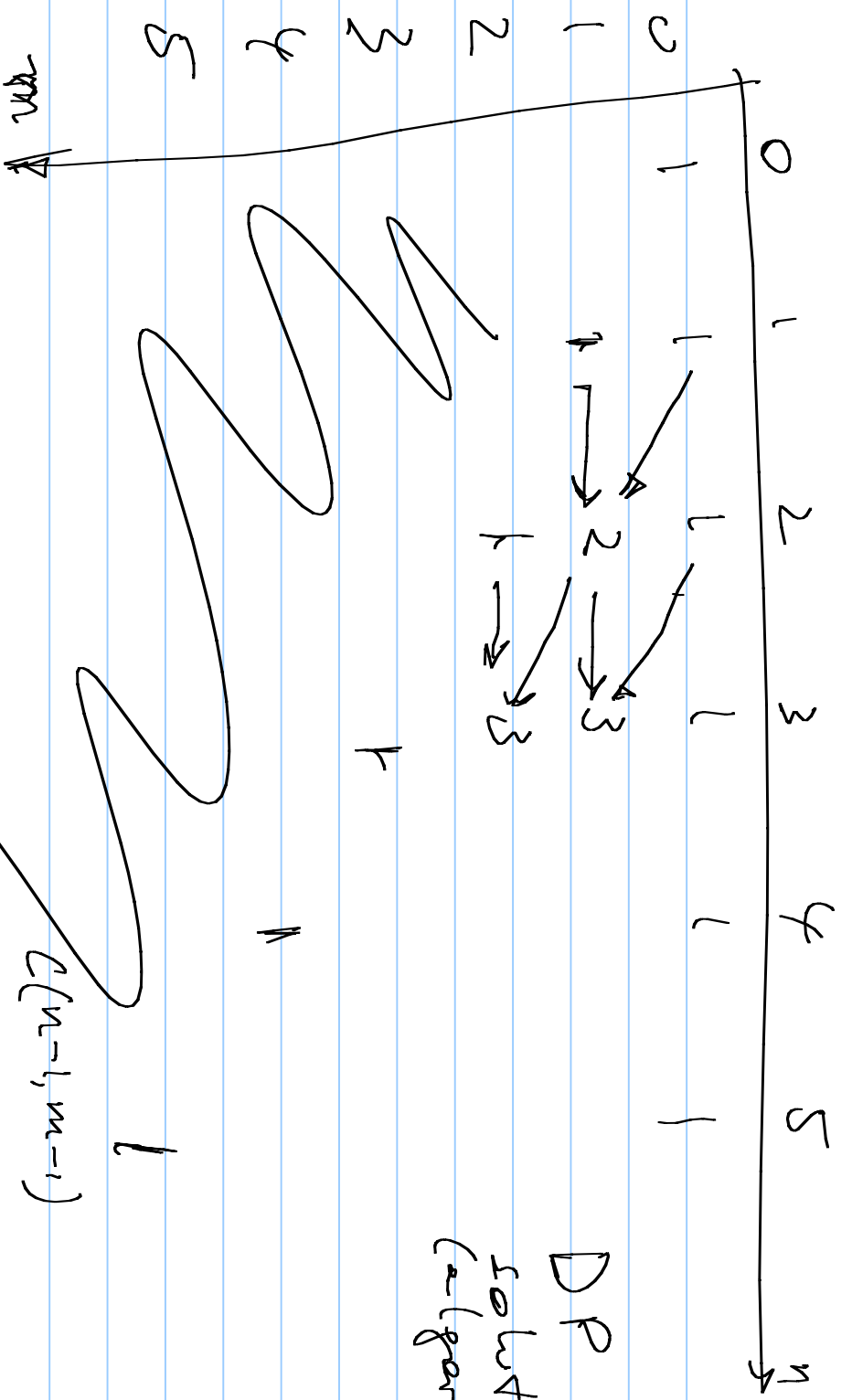
$$\text{Fib}_{i-1} = \text{loc}$$

DP algorithm

for Fibonacci numbers

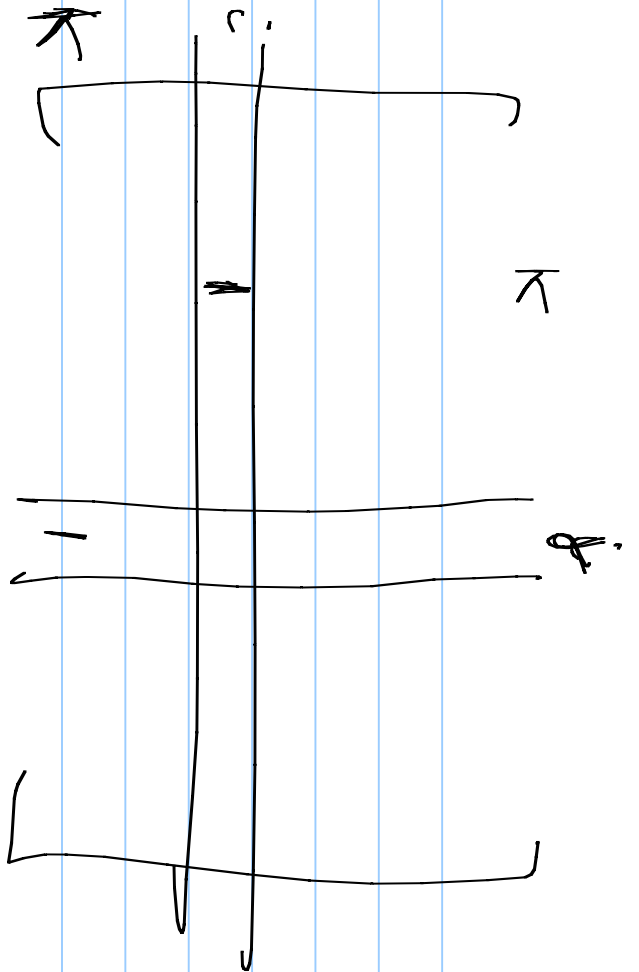
$$\left\{ \begin{array}{l} C(n, 0) = 1 \\ C(m, m) = 1 \\ C(n, m) = C(n-1, m) + C(n-1, m-1) \end{array} \right.$$





DP  
solution  
(calculation)

Data Dependency pattern:  
 $C(n-1, m)$  to  $C(n, m)$



$i \rightarrow k \rightarrow j$