Q) Given a, b string which has the following characters
set → {[a-z], *, ?}

Implement a wildcard pattern matching

a-z → alphabets from (a-z)

A → abdmy
B → a*b?*y
→ True

? → Match any single character

* → Matches any sequence of char (include empty)

A → aab
B → c*a*b
→ false

A → ab
B → ?*
→ true

* any seq of char (even empty string)

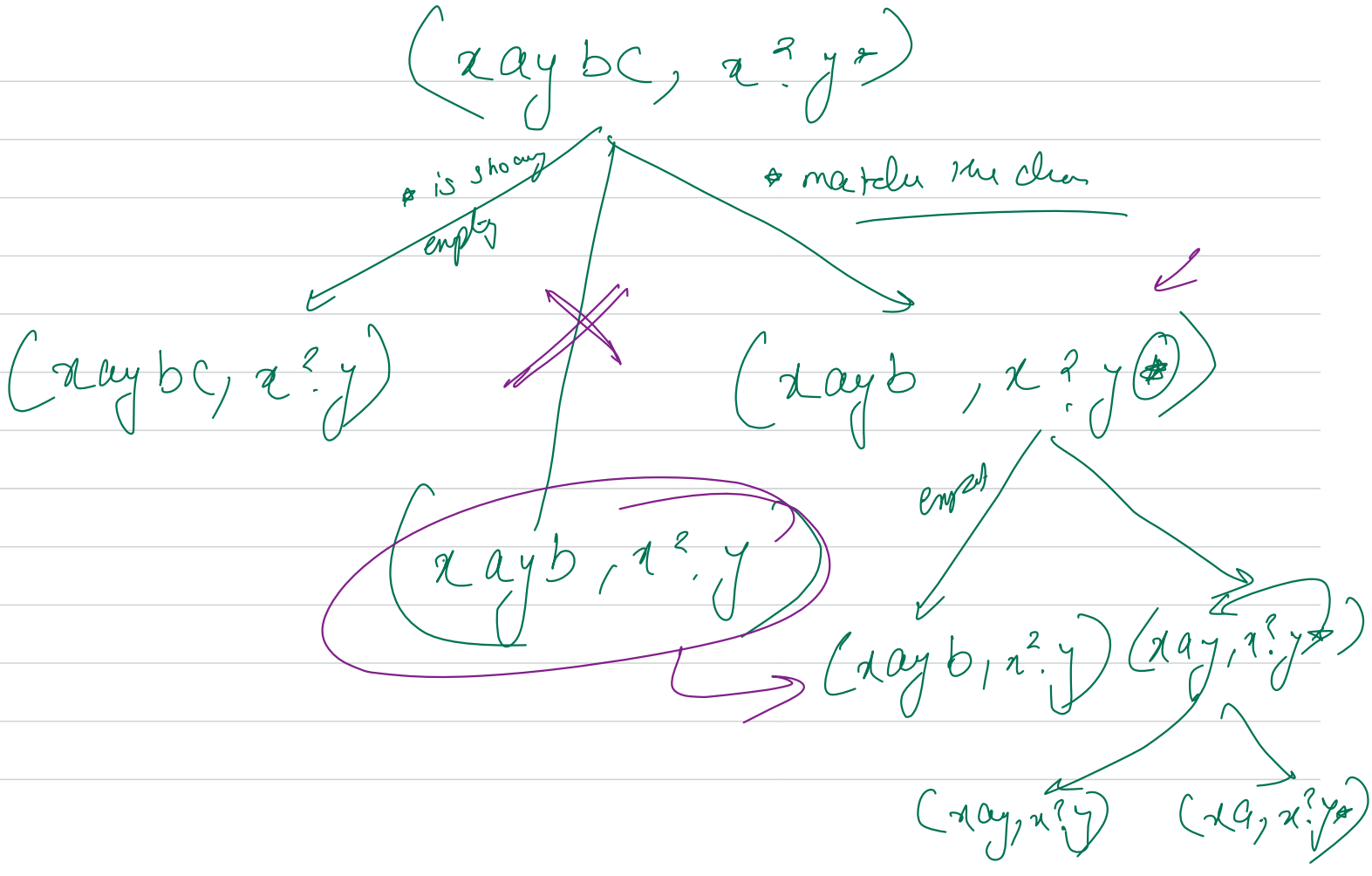
A → x a y b c (i)

B → x ? y * (j)

→ True

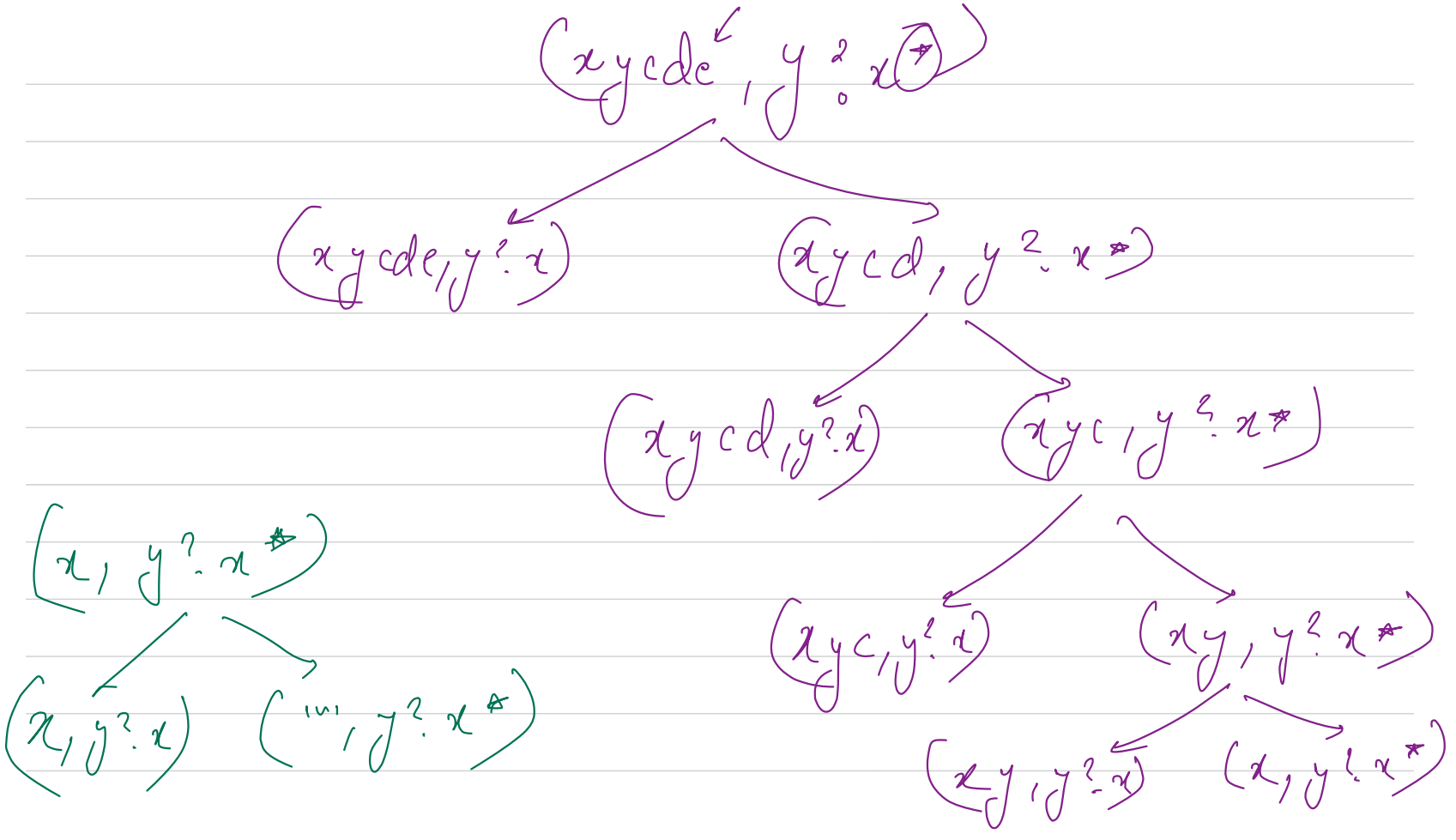
$$f(i,j) = \begin{cases} f(i-1,j-1) & \text{if } A[i] == B[j] \\ f(i-1,j-1) & \text{if } B[j] == ? \\ f(i,j-1) \text{ or } f(i-1,j) & \text{if } B[j] == * \\ \text{false} & \text{else} \end{cases}$$

whether A[0,i] matches B[0,j] based on the rules


(xaybc, x?y)
* is showing
empty
* matches the char
(xaybc, x?y)
(xayb, x?y*)
(xayb, x?y)
empty
(xayb, x?y)
(xay, x?y*)
(xay, x?y)
(xa, x?y*)

* → empty seq → A remains as it is and B looses star

* → non empty → A looses a char & B remains as it is


(xycdc, y?:x*)
(xycde, y?:x)
(xycd, y?:x*)
(xycd, y?:x)
(xyc, y?:x*)
(x, y?:x*)
(xyc, y?:x)
(xy, y?:x*)
(x, y?:x)
(w, y?:x*)
(xy, y?:x)
(x, y?:x*)

```
? -> any single character
* -> matches 0 or more character before *

aab, c*a*b -> true
ca, ?* ->  c, ?*

f(i, j) = f(i-1, j-1)   // s1[i] == s2[j] or s2[j] == '?'

f(i, j) = f(i, j-2) // if s2[j] == '*' // zero occurence

f(i, j) = f(i-1, j) // s2[j-1] == s1[i] or s2[j-1] == '?'// s2[j]
== '*' // multiple occurence of precceding char



ab, c* // choice either you include or exclude

c** -> c*

??*
```

Q) String → s, count the no. of distinct subsequence of s.

$|s| \leq 10^3$

abc

↳ a
b
ab
abc
ba
aa

6

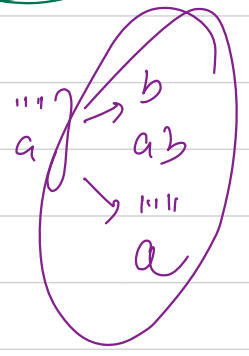
abc → 2^3 - 1

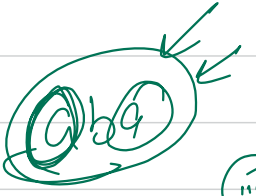
S = (a b a b)

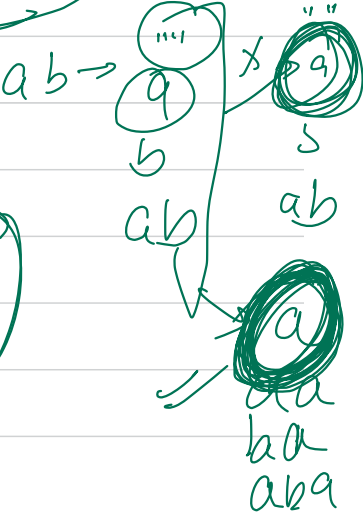
S [0,0] → 2

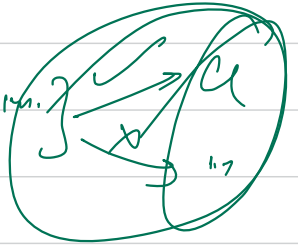
S [0,1] → 4

S [0,2] → 7





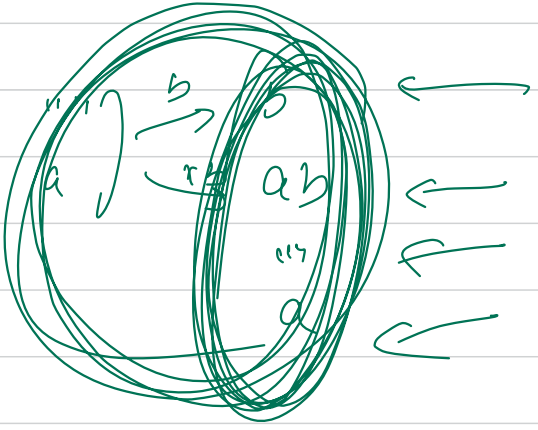


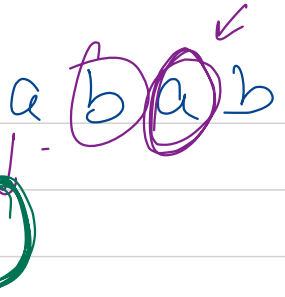


$S[0,2] \rightarrow (\text{"}, a, b, aa, ab, ba, aba)$

$S[0,3] \rightarrow (\text{"}, a, b, aa, ab, ba, aba)$ +

$(bb, aab, abb, bab, abab)$





S[0,1] → 3

S[0,2] → 6

⋮

a
ab
b

→ a
→ ab
→ ba
→ aba
→ b
→ aa
→ a

Can i a mi