Recursion.

also induction pf.

1. Examples.

1) Let S be the set of strings on the alphabet $0, 1, 2, 3$ do not contain 12 or 20 as a substring. Give a recursion for the number $h(n)$ of strings in S of length n.

$h(n)$: $\underbrace{\_\_\_\_\_}_{n-1}$ 0 $\longrightarrow h(n-1) - h(n-1, 2)$. ← length $n-1$. end with 2.

1 $\longrightarrow h(n-1)$.

2 $\longrightarrow h(n-1) - h(n-1, 1)$.

3. $\longrightarrow h(n-1)$.

$\therefore h(n) = 4h(n-1) - h(n-1, 2) - h(n-1, 1)$.

$h(n-1, 2)$: $\overbrace{\_\_\_\_}^{n-2}$ 2. : $h(n-2) - h(n-2, 1)$.

$h(n-1, 1)$: $\overbrace{\_\_\_}^{n-2}$ 1 : $h(n-2)$

遇到先不急着下算，先看最后一个(同方式).

$\therefore h(n) = 4h(n-1) - (h(n-2) - h(n-3)) - h(n-2)$.

$= 4h(n-1) - 2h(n-2) + h(n-3)$.