**Big O specific calculation**

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* factorial(1) = 1
* factorial(2) = factorial(1)\*2 = 2
* factorial(3) = factorial(2) \*3 = 6
* factorial(4) = factorial(3) \*4= 24
* ...
* factorial(n) = factorial(n-1) \*n

factorial(n-1) = factorial(n-2) \* 2 = factorial(n-3) \* 3 ... factorial(n-j) \* j

stops when n - j = 1, so j = n - 1.

factorial(j) = factorial(j-1) \*j = factorial(n-2) \*(n-1)

factorial(n - 1) = = factorial(n-2) \*(n-1)

n - 1 = (n-2) \*(n-1) = n^2 -n -2n -2

n-1 = n^2 -3n -3

n = n^2 -3n -2 => polynominal time

Factorial has polynominal time

Idea is find the pattern then find th dominant term