By,using mathematical induction we know,

1 · 2 + 2 · 3 + 3 · 4 + ... + n(n+1) is (n(n+1)(n+2))/3

Given

1 · 2 + 2 · 3 + 3 · 4 + ... + (n-1)n +n(n+1)

(n(n+1)(n+2))/3 + n(n-1)

n(n2+3n+2)/3 +n2-n

n3+3n2+2n+3n2-3n/3

n3+6n2-n/3

f(n)= n3+6n2-n/3

Assuming n>1 then,

F(n)/G(n)=( n3+6n2-n/3)/n3 < (n3+6n3-n3)/n3 =2

So,C=2 and we know 2n2<2n3 and (1/3)n<(1/3)n3

Therefore, n3+6n2-n/3 is o(n3) because

n3+6n2-n/3 <= n3 whenever n>1.