Покажите, что последовательность an=(1 + 1/n)^n возрастающая

an=(1+1/n)^n=1^n+C(n,1)*1/n+C(n,2)*1/n^2+...+C(n,n)*1/n^n

an+1=(1+1/(n+1))^(n+1)=1^(n+1)+C(n+1,1)*1/(n+1)+C(n+1,2)*1/(n+1)^2+...+C(n+1,n+1)*1/(n+1)^(n+1)

C(n,1)=n!/1!(n-1)!=n
C(n+1,1)=(n+1)!/1!n!=n+1

C(n,k)/n^k=n!/[k! (n-k)! n^k]=1/[k! n^k] * n!/(n-k)! = 1/[k! n^k] * n*(n-1)*...*(n-k+1)=1/[k! n^k] * n*(n-1)*...*(n-k+1)=
=1/[k!] * n/n*(n-1)/n*...*(n-k+1)/n=1/[k!] * 1*(1-1/n)*...*(1-(k-1)/n)

C(n+1,k)/(n+1)^k=(n+1)!/[k! (n+1-k)! (n+1)^k]=(n+1)*(n+1-1)*(n+1-2)*...*(n+1-k+1)/[k! (n+1)^k]=
=1/[k!] * (n+1)/(n+1)*(n+1 - 1)/(n+1)*(n+1-2)/(n+1)*...*(n+1-k+1)/(n+1) =
1/[k!] * 1 *(1 - 1/(n+1))*...*(1-(k-1)/(n+1))

1/[k!] * 1 *(1 - 1/(n+1))*...*(1-(k-1)/(n+1))>1/[k!] * 1*(1-1/n)*...*(1-(k-1)/n)
1 *(1 - 1/(n+1))*...*(1-(k-1)/(n+1))> 1*(1-1/n)*...*(1-(k-1)/n)

n!/(n-3)! = n*(n-1)*(n-2)*(n-3)! / (n-3)!= n*(n-1)*(n-2)

(n+1)!/[k! (n+1-k)! (n+1)^k] / n!/[k! (n-k)! n^k] =
=(n+1)! [k! (n-k)! n^k] / n! [k! (n+1-k)! (n+1)^k]=
=(n+1) [n^k] / [(n+1-k) (n+1)^k]=
=[n^k] / [(n+1-k) (n+1)^(k-1)]