Formale Grundlagen der Informatik I - Assignment 03

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1 Sequences and Sums

a) i.

ii.

iii.

2 Binomial Coefficient

a)

b)

3 Mathematical Induction Proofs

a) It is well suited for

b) First you make a hypothesis. Then you perform the Base step, followed by the Inductive step. Then make the conclusion.

i.

ii.

c)

d) i. p(2)
$2^n < (2+1)!$
$4 < (3 * 2 * 1)$

$4 < 6$
$The statement is true, so P(2) is true. P(k):$
$2^k < (k+2)!$

ii. P(k+1):
$2^(k+1) < ((k+1)+1)!" < (k+2)! We have to show that the statement P() holds also for k+1. So we have to solve the inequality of step iii. and show that it is true.$