

Tutorial VIII

Discrete Structures (CS21001)

Autumn Semester 2014

October 7, 2014

1. Find the number of solutions of

$$e_1 + e_2 + e_3 = 17$$

where $2 \leq e_1 \leq 5, 3 \leq e_2 \leq 6, 4 \leq e_3 \leq 7$.

2. Use generating function to solve the recurrence relation $a_k = 3 \cdot a_{k-1} + 2$ with the initial condition $a_0 = 1$.
3. Use generating function to prove Vandermonde's identity: $C(m+n, r) = \sum_{k=0}^r C(m, r-k)C(n, k)$, whenever m, n and r are non-negative integers with r not exceeding either of m and n .