**5.1.10.**

(c) The generating function for the sequence (1, 1, 1, …) is

.

Let (\*) = S

We have Geometric Sequence Formula:

In this case:

u1 = 1

n = ∞

choose q = x that 0 < x < 1

Then we have:

**5.3.3.** [G] For any with, the number of partitions of n into k parts, each of which appears at most k times, is equal to the number of partitions of n into parts the sizes of which are not divisible by k + 1.

**Proof:**

We have the generating function for partitions, each part appearing at most k times is:

Multiply each part for , then distribute and simplify (same as Theorem 5.3.2.) we have:

which is exactly the generating function for the number of partitions of n into k parts the size of which are not divisible by k + 1

**Example 5.6.2.** Show that the exponential generating function for the sequence

Is

**Proof:**

We have the E.G.F. for the sequence of numbers (ar) is defined to be the power series

With this sequence:

a0 = 1

a1 = 1 \* 3

a2 = 1 \* 3 \* 5

ar = 1 \* 3 \* 5 \* … \* (2r + 1)

the E.G.F. will be