(SIGNLESS) STIRLING NUMBERS OF THE 1ST KIND
IN-CLASS GROUP WORK
WEDNESDAY, FEBRUARY 9, 2011 – MA 614

1. A recurrence

Give a combinatorial proof that for $n \geq 1$, with $c(0,k) = c(k,0) = \delta_{0,k}$,

$$c(n,k) = c(n-1,k-1) + (n-1)c(n-1,k)\,.$$

NOTE: Recall that $\delta_{0,k}$ is equal to 0 when $k \neq 0$ and 1 when $k = 0$.

2. An ogf

Using your recurrence, prove that for $n \geq 1$

$$\sum_{k=0}^{n} c(n,k)t^n = t(t+1)(t+2)\cdots(t+n-1)\,.$$