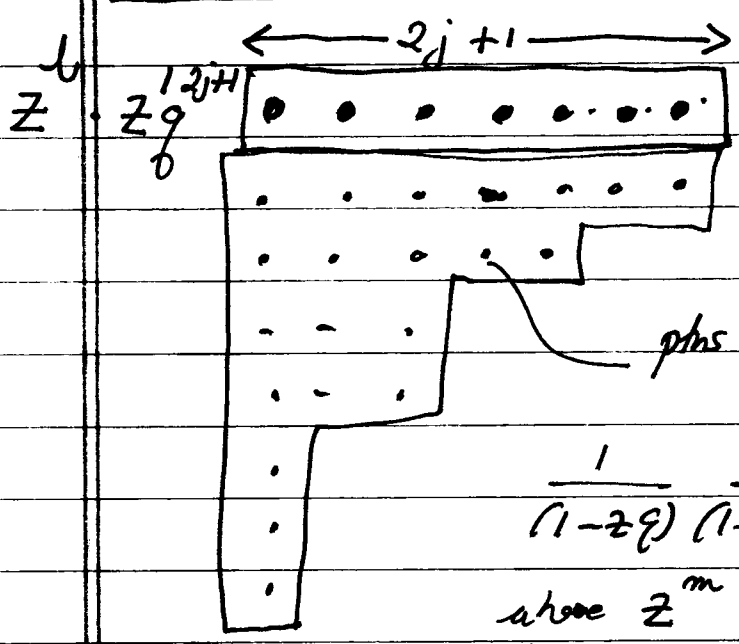
PTNS into ODD PARTS:



$$\frac{1}{(1-zq)}\ \frac{1}{(1-zq^3)}\ \cdots\ \frac{1}{(1-zq^{2j+1})}$$

where z^m cor. to # of parts m

we want $\dfrac{zq^{2j+1}}{(zq;q^2)_{j+1}} = \sum_{\lambda \text{ odd parts} \le 2j+1} z^{\#(\lambda)}\, q^{|\lambda|}$

We want $k = \ell + \#(\lambda)$,

ie $2k = 2\ell + 2\#(\lambda)$

Coeff of z^k to generate the desired partitions;

ie $k = \ell + \#(\lambda)$

$2k = 2\ell + 2\#(\lambda)$

$2k+1 = 2\ell+1 + 2\#(\lambda)$

But $2k+1 =$ largest part $+ 2\#(\lambda)$

$2k+1 = 2j+1 + 2\#(\lambda)$

& hence $\ell = j$.

Hence G.F. for ptns into odd parts with largest part $2j+1$ in which $2k+1 = 2j+1 + 2\#(\lambda)$ is coeff of z^k in $z^{j+1}q^{2j+1}/(zq;q^2)_{j+1}$