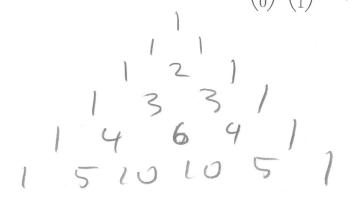
Name: K-e 4

You must show your work to get full credit.

1. Write out the first 6 row of Pascal's Triangle. That it starts with the two rows $\begin{pmatrix} 0 \\ 0 \end{pmatrix} = 1$ and $\begin{pmatrix} 1 \\ 0 \end{pmatrix}, \begin{pmatrix} 1 \\ 1 \end{pmatrix} = 1, 1$ and ends with the row that starts $\begin{pmatrix} 5 \\ 0 \end{pmatrix}, \begin{pmatrix} 5 \\ 1 \end{pmatrix} = 1, 5, \dots$



2. Use Pascal's Triangle to expand the following:

(a)
$$(a+b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$$

- (b) $(2x-3y)^4 = (2\chi)^4 + 4(2\chi)^3(-3y) + 6(2\chi)^2(-3y)^2 + 4(2\chi)(-3y)^3 + (-3y)^4$ $= 2^4 \chi^4 + 4 \cdot 2^3(-3)\chi^3 + 6 \cdot 2^2(-3)^2 \chi^2 y^2 + 4 \cdot 2(-3)^3 \chi^3 y^3 + (-3y)^4 y^4$ $= 16\chi^4 - 192\chi^3 y + 216\chi^2 y^2 - 216\chi y^3 + 81 y^4$
- (c) $\left(t + \frac{1}{t}\right)^3 = \chi^3 + 3\chi^2(\frac{1}{4}) + 3\chi(\frac{1}{4})^2 + (\frac{1}{4})^3$ = $\chi^3 + 3\chi + \frac{1}{4} + \frac{1}{4} + \frac{1}{4}$