

Project example:

Part (a):

$$(a + b)^1 = a + b$$

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

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

$$(a + b)^4 = a^4 + 4a^3b + 6a^2b^2 + 4ab^3 + b^4$$

Part (b) Show that the identity: $\frac{n}{k} = \frac{n-1}{k} + \frac{n-1}{k-1}$ is true.

Pascal Triangle (Part c)

$$\begin{array}{cccccccc}
n=0 & & & & & & & 1 \\
n=1 & & & & & & 1 & 1 \\
n=2 & & & & & 1 & 2 & 1 \\
n=3 & & & 1 & 3 & 3 & 1 & \\
n=4 & & 1 & 4 & 6 & 4 & 1 & \\
n=5 & 1 & 5 & 10 & 10 & 5 & 1 & \\
n=6 & 1 & 6 & 15 & 20 & 15 & 6 & 1 \\
\hline
& 0 & 1 & 2 & 3 & 4 & 5 & 6
\end{array}$$