**4A (1+x)n**

How do we Calculate nCr?



1. Find: $\left(1+x\right)^{4}$ **without** using the nCr button on your calculator
2. Find: $\left(1-2x\right)^{3}$ **without** using the nCr button on your calculator

When does this formula come unstuck?

1. Find $\frac{1}{(1+x)}$ up to the $x^{3}$ term
2. Find the Binomial expansion of: $(1-x)^{\frac{1}{3}}$ up to the $x^{3}$ term and state the values of x for which it is valid…
3. Find the Binomial expansion of: $\frac{1}{(1+4x)^{2}}$ up to the $x^{3}$ term and state the values of x for which it is valid…
4. Find the Binomial expansion of: $\sqrt{1-2x}$ up to the $x^{3}$ term and by using x = 0.01, find an estimate for √2

$$f\left(x\right)=\frac{2+x}{\sqrt{1+5x}}$$

1. Find the $x^{2}$ term in the series expansion of $f(x)$
2. State the range of values of $x$ for which the expansion is valid
3. In the expansion of $\left(1+kx\right)^{-4}$ the coefficient of $x^{2}$ is 90, and $k>0$
4. Find the value of $k$
5. Find the corresponding coefficient of the $x^{3}$ term

**4B (a+bx)n**

1. Find the first 4 terms in the Binomial expansion of: $\sqrt{4+x}$
2. Find the first 4 terms in the Binomial expansion of: $\frac{1}{(2+3x)^{2}}$

**4C Partial Fractions**

1. Find the expansion of: $\frac{4-5x}{(1+x)(2-x)}$ up to and including the term in x3