

Binomial ExpansionKey Formulae

FB formula booklet

$$\bullet (a+b)^n = a^n + \binom{n}{1}a^{n-1}b + \binom{n}{2}a^{n-2}b^2 + \dots + \binom{n}{r}a^{n-r}b^r + \dots + b^n \quad \text{FB}$$

$$\text{where } n \in \mathbb{N} \ \& \ \binom{n}{r} = \frac{n!}{r!(n-r)!}$$

$$\bullet (1+x)^n = 1 + nx + \frac{n(n-1)}{2!}x^2 + \frac{n(n-1)\dots(n-r+1)}{r!} + \dots \quad \text{FB}$$

$$\text{where } n \in \mathbb{R} \ \& \ |x| < 1$$

$$\bullet (a+bx)^n = a^n \left(1 + \frac{b}{a}x\right)^n$$

$$\text{where } n \in \mathbb{R} \ \& \ \left|\frac{b}{a}x\right| < 1$$