

These is my two equation

$$\int_0^1 x^k dx = 5 \tag{1}$$

$$x^2 + y^2 = z^2 \tag{2}$$

$$x^n + y^n = z^n, \quad \forall n \geq 3$$

$$x_{11}^{2k} + y_1^2 = z_1^2 \tag{3}$$

$$\sum_{i=1}^\infty a_{ij}^n + b_{ij}^n = \prod_{k=1}^n c_{ij}^k \tag{4}$$

From equation 3, we have got something.  
NowI want to write another equation

$$\sin(x) = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \cdots (-1)^n \frac{x^{2n+1}}{(2n+1)!}$$

Sum  $\sum_{n=1}^\infty 2^{-n} = 1$  inside text

Improved sum  $\sum_{n=1}^\infty 2^{-n} = 1$  inside text.  $\lim_{n \rightarrow \infty} x_n = 0$

$$\left\{ \begin{array}{ccc} \left| \begin{array}{ccc} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & \end{array} \right| \\ 1 & 2 & 3 \\ 42 & 55 & 65 \\ 712 & 855 & 555 \end{array} \right.$$
$$f(x) = \begin{cases} x^2 & \text{if } x \geq 0 \\ x^3 & \text{if } x \leq 0 \end{cases}$$