Formula Sheet (print separately)

Geometric Series formulas

Interval	Sum	Condition	Interval	Sum	Condition
Infinite	$\sum_{k=0}^{\infty} a^k = \frac{1}{1-a}$	|a|<1	**Finite on [1,N]**	$\sum_{k=1}^{N} a^k = \frac{a(1-a^{N+1})}{1-a}$	None
Finite on [0,N]	$\sum_{k=0}^{N} a^k = \frac{1-a^{N+1}}{1-a}$	None	**Finite on $[N_1,N_2]$**	$\sum_{k=N_1}^{N_2} a^k = \frac{a^{N_1}-a^{N_2+1}}{1-a}$	None
Infinite	$\sum_{k=1}^{\infty} a^k = \frac{a}{1-a}$	|a|<1	**Finite on [1,N]**	$\sum_{k=1}^{N} k = \frac{N(N+1)}{2}$	None

■ Partial fractions.

$\frac{f(x)}{(x-a)(x-b)}$	$\frac{A}{x-a} + \frac{B}{x-b}$
$\frac{f(x)}{(x-a)^2}$	$\frac{A}{x-a} + \frac{B}{(x-a)^2}$
$\frac{f(x)}{(x-a)(x^2+bx+c)}$	$\frac{A}{x-a} + \frac{Bx+C}{x^2+bx+c}$
$\frac{f(x)}{(x-a)(x+d)^2}$	$\frac{A}{x-a} + \frac{B}{x+d} + \frac{C}{(x+d)^2}$
$\frac{f(x)}{(x+d)^2}$	$\frac{A}{x+d} + \frac{B}{(x+d)^2}$
$\frac{f(x)}{(x-a)(x^2-b^2)}$	$\frac{A}{x+d} + \frac{Bx+C}{x^2-b^2}$
$\frac{f(x)}{(x^2-a)(x^2-b)}$	$\frac{Ax+B}{x^2-a} + \frac{Cx+D}{x^2-b}$
$\frac{f(x)}{(x^2-a)^2}$	$\frac{Ax+B}{x^2-a} + \frac{Cx+D}{(x^2-a)^2}$