PROPIEDADES DE LA SUMATORIA

#1.- $\displaystyle\sum_{k=1}^{n} k = \frac{n(n+1)}{2}$

#2.- $\displaystyle\sum_{k=1}^{n} k^2 = \frac{n(n+1)(2n+1)}{6}$

#3.- $\displaystyle\sum_{k=1}^{n} k^3 = \left[\frac{n(n+1)}{2}\right]^2$

#4.- $\displaystyle\sum_{k=1}^{n} k^4 = \frac{n(n+1)(2n+1)(3n^2+3n-1)}{30}$

#5.- $\displaystyle\sum_{k=p}^{q} k = \frac{(q+p)(q-p+1)}{2}$

#6.- $\displaystyle\sum_{k=1}^{n} 2k = n(n+1)$

#7.- $\displaystyle\sum_{k=1}^{n} 4k = 2n(n+1)$

#8.- $\displaystyle\sum_{k=1}^{n} (4k-1) = n(2n+1)$

#9.- $\displaystyle\sum_{k=1}^{n} k(k-1) = \frac{1}{3}n(n+1)(n+2)$

#10.- $\displaystyle\sum_{k=1}^{n} \frac{1}{k(k+1)} = \frac{n}{n+1}$

#11.- $\displaystyle\sum_{k=1}^{n} (2k)^2 = \frac{2}{3}n(n+1)(2n+1)$

#12.- $\displaystyle\sum_{k=1}^{n} (2k)^3 = 2n^2(n+1)^2$

#13-. $\displaystyle\sum_{k=1}^{n} (k)^4 = \frac{n(n+1)(6n^3+9n^2+n-1)}{30}$

#14.- $\displaystyle\sum_{k=1}^{n} 2^k = 2(2^n-1)$

#15.- $\displaystyle\sum_{k=1}^{n} 3^k = \frac{3}{2}(3^n-1)$

#16.- $\displaystyle\sum_{k=1}^{n} A^k = \frac{A}{A-1}(A^n-1)$

#17.- $\displaystyle\sum_{k=1}^{n} (2k-1) = n^2$

#18.- $\displaystyle\sum_{k=1}^{n} (2k-1)^2 = \frac{1}{3}n(2n-1)(2n+1)$

#19.- $\displaystyle\sum_{k=1}^{n} (2k-1)^3 = n^2(2n^2-1)$

#20.- $\displaystyle\sum_{k=1}^{n} k(k+1) = \frac{1}{3}n(n+1)(n+2)$

#21.- $\displaystyle\sum_{k=1}^{n} 2k(2k+2) = \frac{4}{3}n(n+1)(n+2)$

#22.- $\displaystyle\sum_{k=1}^{n} k(3^k) = \frac{(2n-1)(3^{n-1})+3}{4}$

#23.- $\displaystyle\sum_{k=1}^{n} \frac{1}{(k+1)k} = \frac{n}{n+1}$

#24.- $\displaystyle\sum_{k=1}^{n} \frac{1}{(2k-1)(2k+1)} = \frac{n}{2n+1}$

#25.- $\displaystyle\sum_{k=1}^{n} \frac{1}{(2k)(2k+2)} = \frac{n}{4(n+1)}$

#26.- $\displaystyle\sum_{k=1}^{n} \frac{1}{k(k+1)(1+2)} = \frac{n(n+3)}{4(n+1)(n+2)}$

#27.- $\displaystyle\sum_{k=1}^{n} \frac{k^2}{(2k-1)(2k+1)} = \frac{n(n+1)}{2(2n+1)}$

#28.- $\displaystyle\sum_{k=1}^{n} \frac{2k+1}{(k^2)(k+1)^2} = \frac{n(n+2)}{(n+1)^2}$

#29.- $\displaystyle\sum_{k=1}^{n} (2k-1)(3^k) = (n-1)(3^{n+1})+3$

#30.- $\displaystyle\sum_{i=a}^{b} i^2 = \frac{b(b+1)(2b+1) - a(a-1)*(2a-1)}{6}$