Cheatography

Test1-477 Cheat Sheet by prahbasKumra via cheatography.com/120662/cs/21933/

Series

$$\begin{split} \sum_{i=1}^{n} i &= \frac{n(n+1)}{2}, \quad \sum_{i=1}^{n} i^2 = \frac{n(n+1)(2n+1)}{6}, \quad \sum_{i=1}^{n} i^3 = \frac{n^2(n+1)^2}{4}.\\ \text{In general:}\\ \sum_{i=1}^{n} i^m &= \frac{1}{m+1} \Big[(n+1)^{m+1} - 1 - \sum_{i=1}^{n} \left((i+1)^{m+1} - i^{m+1} - (m+1)i^m \right) \Big]\\ \sum_{i=1}^{n-1} i^m &= \frac{1}{m+1} \sum_{k=0}^{m} \binom{m+1}{k} B_k n^{m+1-k}. \end{split}$$

Series

$$\begin{split} &\sum_{i=1}^{n}i=\frac{n(n+1)}{2}, \quad \sum_{i=1}^{n}i^2=\frac{n(n+1)(2n+1)}{6}, \quad \sum_{i=1}^{n}i^3=\frac{n^2(n+1)^2}{4}.\\ &\text{In general:}\\ &\sum_{i=1}^{n}i^m=\frac{1}{m+1}\bigg[(n+1)^{m+1}-1-\sum_{i=1}^{n}\left((i+1)^{m+1}-i^{m+1}-(m+1)i^m\right)\bigg]\\ &\sum_{i=1}^{n-1}i^m=\frac{1}{m+1}\sum_{k=0}^{m}\binom{m+1}{k}B_kn^{m+1-k}. \end{split}$$



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