

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

Series

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

Series

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

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By prahbasKumra

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