Finite Series

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Consider the sequence defined by the following Expression:

$$u_n = n^2 - n + 1.$$

Showing all your working, compute the sum of the first 100 terms of this sequence.

Important Theorems

Theorem 1

$$\sum_{k=1}^{n} 1 = \mathrm{n}$$

Theorem 2

$$\sum_{k=1}^{n} \mathrm{k} = \frac{\mathrm{n}(\mathrm{n}+1)}{2}$$

Important Theorems

Theorem 3

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

Theorem 4

$$\sum_{k=1}^{n} x^k = \frac{x^{n+1} - 1}{x - 1}$$

for all $x \in \mathbb{R}$ with $x \neq 1$

Finite Series

$$u_n = n^2 - n + 1.$$

$$\sum_{k=1}^{100} \mathrm{u_n} = \sum_{k=1}^{100} \mathrm{k^2} - \sum_{k=1}^{100} \mathrm{k} + \sum_{k=1}^{100} 1$$

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$$\sum_{k=1}^{100} 1 =$$

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$$\sum_{k=1}^{100} k =$$

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$$\sum_{k=1}^{100} k^2 =$$

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$$\sum_{k=1}^{100} u_n = \sum_{k=1}^{100} k^2 - \sum_{k=1}^{100} k + \sum_{k=1}^{100} 1$$

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