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1

Smarandache函数

\[
Z(n) = \min\{m : n = m(m+1)/2, \ m \in N\}.
\]

\[
Z(1) = 1, \ Z(2) = 3, \ Z(3) = 2, \ Z(4) = 7, \ Z(5) = 4, \ Z(6) = 3, \ Z(7) = 6, \ Z(8) = 15, \ Z(9) = 8, \ Z(10) = 4, \ Z(11) = 10, \ Z(12) = 8, \ Z(13) = 12, \ Z(14) = 7, \ Z(15) = 5, \ Z(16) = 31, \ Z(17) = 16, \ Z(18) = 8, \ Z(19) = 18, \ Z(20) = 15, \ldots.
\]

\[
\sum_{k=1}^{n} Z(k) = \frac{n(n+1)}{2}.
\]

2

\[
Z(2k) \leq \frac{15n^2}{16} + \frac{9n}{2} + \frac{45}{4}.
\]

\[
\sum_{k=1}^{n} Z(2k) = \sum_{m=1}^{n} Z(2(2k-1)) + \sum_{m=1}^{n} Z(4k),
\]

\[
Z(2k-1) \leq 2k-1 \quad \forall k \in Z(2k)
\]
\[ -1 \leq k < 2 \quad 2 \leq k \leq n \]
\[ \sum_{k=1}^{n} Z(2k-1) = Z(2) + \sum_{k=1}^{n} Z(4k) \leq \sum_{k=1}^{n} Z(4(2k-1)) + \sum_{k=1}^{n} Z(8k) \]
\[ \sum_{k=1}^{n} Z(2k) = \sum_{k=1}^{n} Z(2(2m+1)) + \sum_{k=1}^{n} Z(2k) - \sum_{k=1}^{n} Z(2k-1) \]
\[ \sum_{k=1}^{n} Z(2k) < \frac{n(n+1)}{2}, \quad \sum_{k=1}^{n} Z(2k-1) < \frac{n(n+1)}{2} \]
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\[ \sum_{k=1}^{n} Z(2k) = \sum_{k=1}^{n} Z(2(2m+1)) + \sum_{k=1}^{n} Z(2k) - \sum_{k=1}^{n} Z(2k-1) \]
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\[ \sum_{k=1}^{n} Z(2k-1) < \frac{n(n+1)}{2} \]


A new self-adaptive projection method for variational inequalities

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Abstract: Aim To propose a new self-adaptive projection method for variational inequalities and prove that the method is global convergence under mild condition. Methods Improve searching direction of the existing method and provide new step-size. Results The searching direction and step-size of the proposed method are not zero near the solution and its global convergence is proved under the pseudomonotonicity of the underlying mapping. The efficiency of the new method is illustrated by some preliminary computational results. Conclusion Compared with the existing methods, the new method has fast convergence and weak convergence condition and thus it has larger application scope.

Keywords: variational inequalities; self-adaptive projection method; pseudomonotone; global convergence

An equation involving the pseudo Smarandache function and its positive integer solutions

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Abstract: Aim To study the positive integer solutions of an equation involving the pseudo Smarandache function Z(n). Methods Using the elementary and analytic methods. Results It has proved that the equation has only has two positive integer solutions. Conclusion A problem was solved completely which was proposed by Kenichiro Kashihara in an unpublished paper.

Keywords: the pseudo Smarandache function; equation; positive integer solution