

INFINITE SERIES IDENTITIES INVOLVING QUADRATIC AND CUBIC HARMONIC NUMBERS

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Abstract: By means of the modified Abel lemma on summation by parts, we investigate infinite series involving quadratic and cubic harmonic numbers. Several infinite series identities are established for π^2 and $\zeta(3)$ as consequences.

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Key words: Riemann zeta function, harmonic numbers, Abel's lemma on summation by parts, partial fraction decomposition, telescoping method.