12246. *Proposed by Seán Stewart, Bomaderry, Australia.* Let ζ be the Riemann zeta function, defined for $n \geq 2$ by $\zeta(n) = \sum_{k=1}^{\infty} 1/k^n$. Let H_n be the nth harmonic number, defined by $H_n = \sum_{k=1}^{n} 1/k$. Prove

$$\sum_{n=2}^{\infty} \frac{\zeta(n)}{n^2} + \sum_{n=2}^{\infty} (-1)^n \frac{\zeta(n) H_n}{n} = \frac{\pi^2}{6}.$$