Define the <u>Harmonic numbers</u>, H_n, as the summation from 1 to $\frac{1}{n}$. More specifically:

$$H_n = 1 + \frac{1}{2} + \frac{1}{3} + \cdots \frac{1}{n}$$

Prove that for all $n \in \mathbb{Z}_{\geq 1}$,

$$\sum_{i=1}^{n} H_i = (n+1)H_n - n$$