

北一女中 102 學年度《數戰數決》有獎徵答活動

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題號：5-2

頁碼/總頁數：\_\_\_\_\_ (如果只有一頁，可不填)

$$\begin{aligned}
 S &= (1 - \frac{1}{2}) + (\frac{1}{3} - \frac{1}{4}) + \dots + (\frac{1}{2013} - \frac{1}{2014}) \\
 &= (1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \dots + \frac{1}{2014}) - 2(\frac{1}{2} + \frac{1}{4} + \dots + \frac{1}{2014}) \\
 &= (1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \dots + \frac{1}{2014}) - (1 + \frac{1}{2} + \dots + \frac{1}{1007}) \\
 &= \frac{1}{1008} + \frac{1}{1009} + \dots + \frac{1}{2014}
 \end{aligned}$$

$$\begin{aligned}
 T &= \frac{1}{3022} (\frac{1}{1008} + \frac{1}{2014}) + \frac{1}{3022} (\frac{1}{1009} + \frac{1}{2013}) + \dots \\
 &= \frac{1}{1511} (\frac{1}{1008} + \frac{1}{1009} + \dots + \frac{1}{2014}) + \frac{1}{3022} (\frac{1}{2014} + \frac{1}{1008})
 \end{aligned}$$

$$\frac{S}{T} = 1511.$$