Proof Without Words: Rearranged Alternating Harmonic Series

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Lord Brouncker [1], and more recently Hudelson [2], visually demonstrate that the alternating harmonic series converges and has sum equal to ln(2). We modify their technique to demonstrate that

\[
1 - \frac{1}{2} - \frac{1}{4} + \frac{1}{3} - \frac{1}{6} - \frac{1}{8} + \frac{1}{5} - \frac{1}{10} - \frac{1}{12} + \frac{1}{7} - \frac{1}{14} + \cdots = \frac{1}{2} \ln(2).
\]

Summary. We visually compute the sum of a rearranged alternating harmonic series.

References
