

Zadatak 30. Dokaži da je

$$\begin{aligned} 1 - \frac{1}{2} + \frac{1}{3} - \frac{1}{4} + \dots + \frac{1}{2n-1} - \frac{1}{2n} \\ = \frac{1}{n+1} + \frac{1}{n+2} + \dots + \frac{1}{2n}. \end{aligned}$$

Rješenje. Vrijedi

$$\begin{aligned} 1 - \frac{1}{2} + \frac{1}{3} - \frac{1}{4} + \dots + \frac{1}{2n-1} - \frac{1}{2n} \\ = 1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \dots + \frac{1}{2n-1} + \frac{1}{2n} - 2\left(\frac{1}{2} + \frac{1}{4} + \frac{1}{6} + \dots + \frac{1}{2n}\right) \\ = \left(1 + \frac{1}{2} + \frac{1}{3} + \dots + \frac{1}{n}\right) + \left(\frac{1}{n+1} + \frac{1}{n+2} + \dots + \frac{1}{2n-1} + \frac{1}{2n}\right) \\ - \left(1 + \frac{1}{2} + \frac{1}{3} + \dots + \frac{1}{n}\right) = \frac{1}{n+1} + \frac{1}{n+2} + \dots + \frac{1}{2n}. \end{aligned}$$