holds for all non-negative sequences $\{y_n\}$, where $B_n = \sum_{k=1}^{n} b_k, \quad n \in \mathbb{N}$.

In the continuous case, similar questions were considered in [1] and [2].

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DIFFERENTIAL-BOUNDARY EQUATIONS WITH ALGEBRAIC TERMS

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We consider a differential-boundary equation with algebraic terms on a finite interval $0 < x < 1$

$$l(y) \equiv \frac{d}{dx}\left(\frac{dy(x)}{dx} + \sum_{i=1}^{k} h_i(x)U_i(y) + \sum_{j=1}^{s} \lambda_j q_j(x)\right) + r_1(x)\frac{dy(x)}{dx} + r_0(x)y(x) = f(x), \tag{1}$$

A distinctive feature of these equations is that, alongside the function being sought, a certain number of unknown values must also be determined. This leads to the critical question of unique solvability: how many and what type of conditions need to be imposed on equation (1) to ensure that the resulting problem has a unique solution in a given space?

This kind of equations are classified as differential operator equations in [1]. Such equations, consisting of both differential and algebraic parts, are usually called differential-algebraic equations [2; 3].

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