Title: New inequalities of Fejér-Jackson-type

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The classical Fejér-Jackson inequality states that for \( n \geq 0 \) and \( x \in [0, \pi] \),
\[
\sum_{k=0}^{n} \frac{\sin((k+1)x)}{k+1} \geq 0.
\]

Here, we present an extension and a counterpart of this result. We prove that the inequalities
\[
\sum_{k=0}^{n} \frac{\sin(ck+1)x}{ck+1} \geq 0 \quad \text{and} \quad \sum_{k=0}^{n} (-1)^k \frac{\sin(ck+1)x}{ck+1} \geq 0
\]
are valid for all integers \( c \geq 1 \), \( n \geq 0 \), and real numbers \( x \in [0, \pi] \).

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