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On an Opial Inequality with a Boundary Condition

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Abstract: R.C. Brown conjectured (in 2001) that the Opial-type inequality

$$4\int_0^1 |yy'|\,dx \le \int_0^1 (y')^2\,dx,$$

holds for all absolutely continuous functions $y : [0,1] \to \mathbb{R}$ such that $y' \in L^2$ and $\int_0^1 y\,dx = 0$. This was subsequently proved by Denzler [3].

An alternative proof was given by Brown and Plum [2]. Here we give a shorter proof.