

RESEARCH GROUP IN MATHEMATICAL INEQUALITIES AND APPLICATIONS

PROBLEM CORNER

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The generating function for generalized Bernoulli numbers may be defined as

$$w_s(t) := \frac{\frac{t^{s+1}}{(s+1)!}}{e^t - 1 - t - \dots - \frac{t^s}{s!}}, \quad s = 0, 1, 2, \dots$$

Prove that the inequality

$$\frac{1}{s+1} \leq \frac{w_s(-t) - w_s(t)}{t} \leq \frac{2}{s+2}$$

holds for each real t where both bounds are best possible.