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CONSTRUCTIVE
APPROXIMATION

Corrigendum: The Density of Rational Functions in Markov Systems: A Counterexample to a Conjecture of D. J. Newman

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The main result of [1] is correct as is the construction. However Lemma 4 does not hold in the supremum norm. If the norms in both Lemmas 3 and 4 are taken as the L_1 norm on the appropriate intervals, then both lemmas hold (see references [3] and [7] of [2]). The proof of Theorem 2 now is modified as follows: with f as in the proof, for $-1 \leq x \leq 1$,

$$\left|\frac{\sum a_j \varphi_j}{\sum b_j \varphi_j} - f\right| < \varepsilon < 1$$

together with the normalization

$$\|\sum b_j \varphi_j\|_{[-1,1]} = 1$$

imply

$$\|\sum a_j \varphi_j - (\sum b_j \varphi_j) f\|_{[-1,1]} < \varepsilon$$

and the rest of the proof proceeds essentially as before.

A somewhat simplified version of the results will appear in [1] but only for a particular choice of exponents.

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References

1. P. B. Borwein, T. Erdelyi (to appear): Polynomials and Polynomial Inequalities. New York: Springer-Verlag.
2. P. B. Borwein, B. Shekhtman (1993): *The density of rational functions in Markov systems: A counterexample to a conjecture of D. J. Newman*. Constr. Approx., **9**: 105–110.

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