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factorization theorem for H^∞ functions

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Let H^∞ denote the bounded analytic functions on the unit disc.

Theorem. *Every $f \in H^\infty$ can be written as*

$$f(z) = \alpha I(z)F(z)$$

where $|\alpha| = 1$, I is an inner function and F is a bounded outer function. Conversely any function which can be so written is bounded.

References

- [1] John B. Conway. . Springer-Verlag, New York, New York, 1995.