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Basis of functions on $[0,1], S^1$

Proposition: The $\mathbb{C}$-span of the following are dense in the corresponding spaces

- $\{x^n | n \geq 1\} \subseteq L^2[0,1]$
- $\{z^n | n \in \mathbb{Z}\} \subseteq L^2(S^1)$
- $\{1\} \cup \{\sin(2n\pi x) | n \geq 1\} \cup \{\cos(2n\pi x) | n \geq 1\}$
- $\{\sin(n\pi x) | n \geq 1\}$
- $\{\cos(n\pi x) | n \geq 1\}$

Interestingly, this implies, *even* functions in $L^2[0,1]$ are dense! Similarly, odd functions.

Current note has 0 direct children and 0 total descendants.

- stamp stamp
  - Rf subobjects of and functions on $\mathbb{R}^n, T^n, S^n, \mathbb{C}^n$
    - dense
      - on 0to1 Basis of functions on $[0,1], S^1$

And it has 2 siblings.

- stamp stamp
  - Rf subobjects of and functions on $\mathbb{R}^n, T^n, S^n, \mathbb{C}^n$
    - dense
      - nowhere diffable in C Nowhere differentiable functions are dense in $\mathcal{C}[0,1]$
      - on 0to1 Basis of functions on $[0,1], S^1$