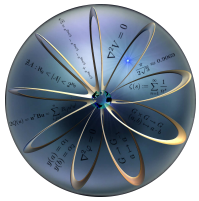

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examples of bounded and unbounded operators

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The aim of this page is to list examples of `http://planetmath.org/BoundedOperator`bounded and unbounded linear operators.

Bounded

- Identity operator, Zero operator
- Shift operators on ℓ^p
- A linear operator is continuous if and only if it is bounded (see `http://planetmath.org/Cont` page).
- Any isometry is bounded.
- A multiplication operator $h(t) \mapsto f(t)h(t)$, where $f(t)$ is continuous and $h \in L^p[0,1]$.
- An integral operator $h(t) \mapsto \int_0^1 K(t,s)h(s)\,ds$, where $\int_0^1 \int_0^1 |K(s,t)|^2\,ds\,dt < \infty$ and $h \in L^2[0,1]$. In fact this is a Hilbert-Schmidt operator.
- The Volterra operator $h(t) \mapsto \int_0^t h(s)\,ds$, where $h \in L^p[0,1]$.

Unbounded

- The derivative is an unbounded operator on the vector space of smooth functions equipped with the sup-norm.