1 | Axler7.11 self-adjoint, Hermitian def

An operator $T \in \mathcal{L}(V)$ is called *self-adjoint* if $T = T^*$ aka it is adjoint to itself. aka: $T \in \mathcal{L}(V)$ is self-adjoint iff

$$\langle Tv, w \rangle = \langle v, Tw \rangle$$

Because adjoint-ness is in some ways analygous to complex conjugation, a self-adjoint operator is somewhat analygous to real numbers (kinda like a number who equals its conjugates real, a map that equals its adjoint is "real")

2 | results

2.1 | Axler7.13 Eigenvalues of self-adjoint operators are real

Every eigenvalue of a self-adjoint operator is real.

2.2 | Axler7.14 Over $\mathbb{C}$, only the 0 operator has Tv being orthogonal to v for all v

For some **complex** vector space V and $T \in \mathcal{L}(V)$, if

$$\langle Tv, v \rangle = 0$$

for all $v \in V$, then $T = 0$.

2.3 | TODO Axler7.15 and Axler7.16??

2.4 | Every self-adjoint operator is normal.