

The identity map  $I_V$  has eigenvectors  $\vec{v}$  with the eigenvalue 1 for all nonzero vectors  $\vec{v} \in V$ .

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The identity map  $V \rightarrow V$  is  $I(v) = v = 1 \cdot v$  for all  $v \in V$ . Thus all  $v \in V$  are eigenvectors with eigenvalue 1.