

## 1 | source

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## 1.1 | axler5.14

2 |  $T|_U$  and  $T/U$ 

## def

Suppose  $T \in \mathcal{L}(V)$  and  $U$  is a subspace of  $V$  invariant under  $T$ .

- The *restriction operator*  $T|_U \in \mathcal{L}(U)$  is defined by

$$T|_U(u) = Tu$$

for  $u \in U$ .

- The *quotient operator*  $T/U \in \mathcal{L}(V/U)$  is defined by

$$(T/U)(v + U) = Tv + U$$

for  $v \in V$ .

## 2.1 | motivation

By using these two operators, we can study a map  $T$  on a big space  $V$  by looking at what it does to vectors in  $U$  and not in  $U$ , with  $T|_U$  and  $T/U$  respectively.

However, Axler gives an example of how this is not always enough info (see Axler5.15).

$$a << b/c$$