

## 0.1 The pseudo-inverse

The definition of the inverse is that:

$$MM^{-1} = I$$

$$M^{-1}M = I$$

We also have:

$$MM^{-1}M = M$$

$$M^{-1}MM^{-1} = M^{-1}$$

### 0.1.1 The inverse of a homomorphism

Generally we don't have inverses of homomorphisms as the number of dimensions are different.

We can, however, find a matrix  $M^+$  which satisfies:

$$MM^+M = M$$

$$M^+MM^+ = M^+$$

This is the pseudo-inverse.