Contents

0.1 Examples of linear operators on real functions

For a function v we can define operators Ov.

Here we consider some examples and their properties.

0.1.1 Real multiplication

$Rv = rf(x)$

This operator is hermitian. This is equivalent to a finite operator of the form rI.

0.1.2 Multiplication by underlying real number

$Xv = xf(x)$

This operator is hermitian. This is equivalent to a finite operator of the form $M_{ii} = i$ and $M_{ij} = 0$.

0.1.3 Differentiation

$$Dv = \frac{\delta}{\delta x} f(x)$$

While this operator is not hermitian, the following is:

$$-iDv = \frac{\delta}{\delta x}[-if(x)]$$