**Complex Exponentials are Eigenfunctions of LTI Systems**

**Proposition 1.6.** *For input with LTI system with impulse response h(t) and output y(t), then,*

*For input and discrete LTI system then output*

To prove it, simply do the continuous time:

**Example 1.7.** *Given the differential equation*

*Then giving*

*For , then the upper limit is zero and the result becomes*