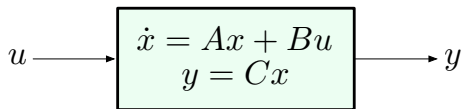


Impulse Response



zero initial condition: $x(0) = 0$

Conclusion so far: for zero initial conditions, the output is the convolution of the input with the system impulse response:

$$y(t) = u(t) \star h(t) = h(t) \star u(t) = \int_{-\infty}^{\infty} u(\tau)h(t - \tau)d\tau$$

Q: Does this formula provide a *practical* way of computing the output y for a given input u ?

A: Not directly (computing convolutions is not exactly pleasant), but ...we can use **Laplace transforms**.