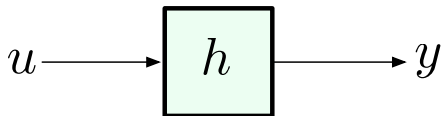


DC Gain



Definition: the steady-state value of the step response is called the *DC gain* of the system.

$$\text{DC gain} = y(\infty) = \lim_{t \rightarrow \infty} y(t) \quad \text{for } u(t) = 1(t)$$

In our example above, the step response is

$$y(t) = \frac{1}{2}1(t) + (2\alpha + \beta - 1)e^{-t} + (1/2 - \alpha - \beta)e^{-2t}$$

therefore, DC gain = $y(\infty) = 1/2$