

### Useful Laplace Transforms

$$f(t) \quad \rightarrow \quad \bar{f}(s)$$

$$1 \quad \rightarrow \quad 1/s$$

$$t^n, \quad n = 0, 1, 2, \dots \quad \rightarrow \quad n!/s^{n+1}$$

$$e^{at} \quad \rightarrow \quad 1/(s - a)$$

$$\sin at \quad \rightarrow \quad a/(s^2 + a^2)$$

$$\cos at \quad \rightarrow \quad s/(s^2 + a^2)$$

$$t \sin at \quad \rightarrow \quad 2as/(s^2 + a^2)^2$$

$$t \cos at \quad \rightarrow \quad (s^2 - a^2)/(s^2 + a^2)^2$$

$$y'(t) \quad \rightarrow \quad s\bar{y}(s) - y(0)$$

$$y''(t) \quad \rightarrow \quad s^2\bar{y}(s) - y'(0) - sy(0)$$

$$e^{at}f(t) \quad \rightarrow \quad \bar{f}(s - a)$$

$$f(t - a)H(t - a) \quad \rightarrow \quad e^{-as}\bar{f}(s)$$