Laplace Transform

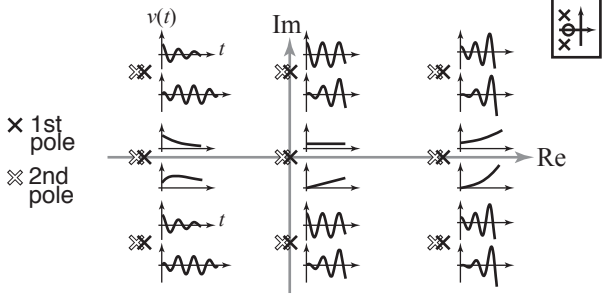
1

$\mathcal{L}$

$$\mathcal{L}\{v(t)\} \equiv V(s) \equiv \int_{0^-}^{\infty} v(t)\, e^{-st}\, dt$$

Pole Waveforms

1

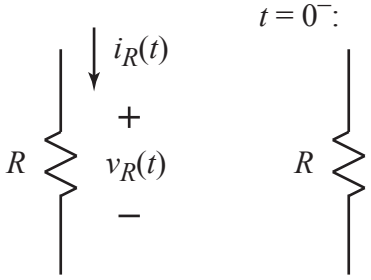


Resistor

1

Z

$t = 0^-$:



Two Real Poles

1

$\frac{A}{s+a}$

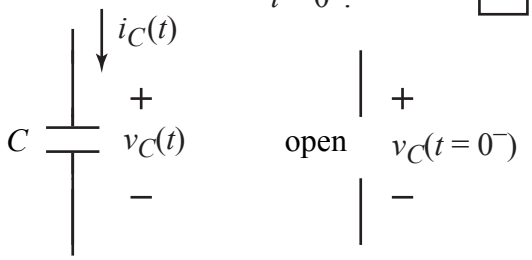
$$Ae^{-at} + Be^{-bt}$$

Capacitor

2

Z

$t = 0^-$:



Double Pole

2

$\frac{A}{s+a}$

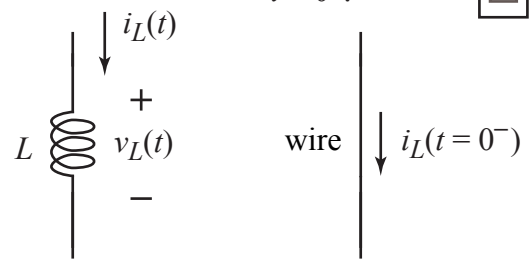
$$Ate^{-at} + Be^{-bt}$$

Inductor

3

Z

$t = 0^-$:



Conjugate Poles

3

$\frac{A}{s+a}$

$$Ae^{-at}\ \omega t + Be^{-at}\ \omega t$$