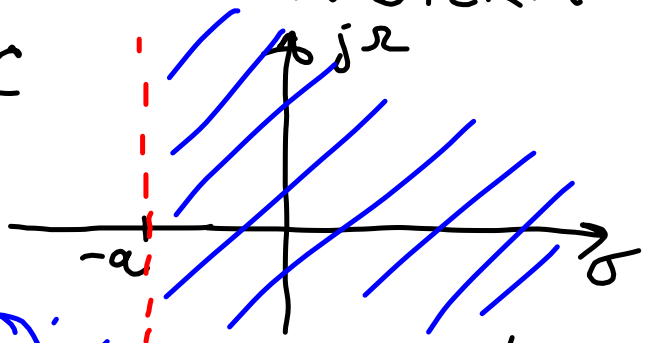
CPE381 #12

MIDTERM 3/9/2015@2:20

ROC



$\frac{1}{s+a} \Rightarrow \mathcal{L}^{-1}(\,) = e^{-at}$

$s = \sigma + j\Omega$

$\frac{1}{\sigma + j\Omega + a} \Rightarrow$

Re

$/\ \sigma + a - j\Omega$

Re + j Im

$e^{j\theta} = \cos\theta + j\sin\theta$

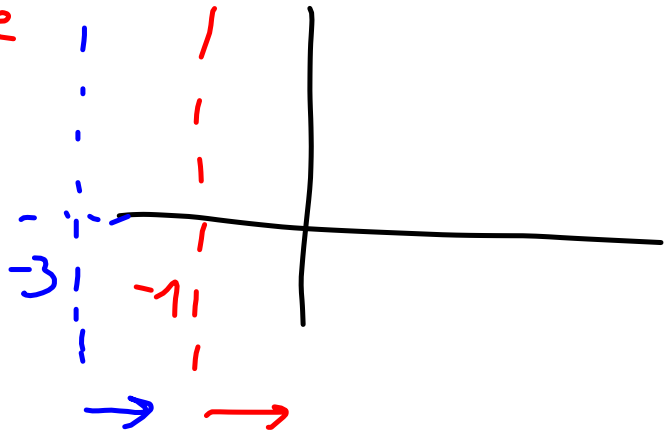
e^{-at} $t \to \infty$ $\to 0$

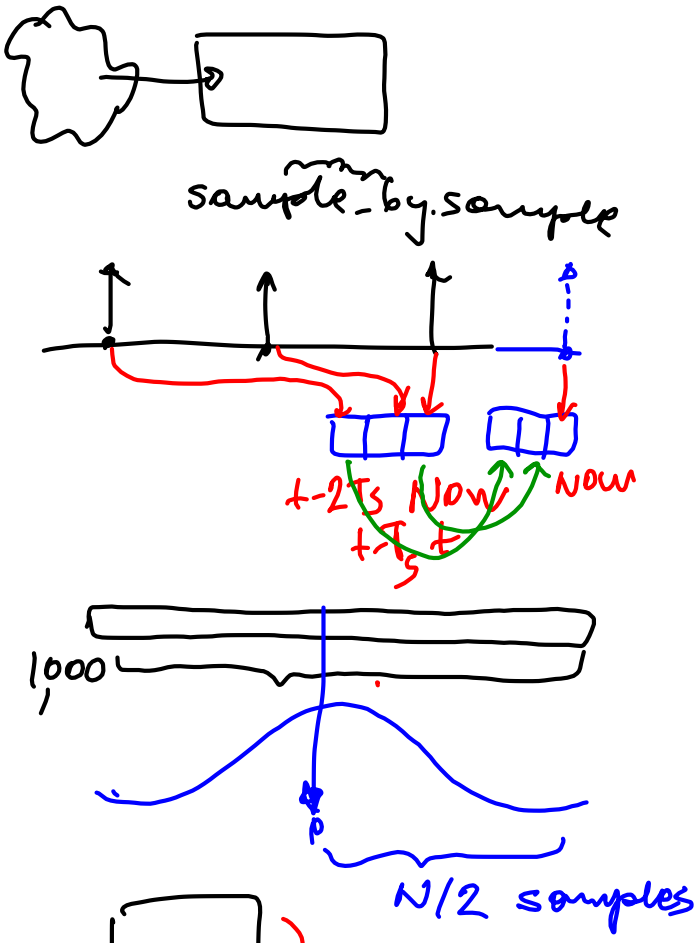
$\frac{1}{s+a}$

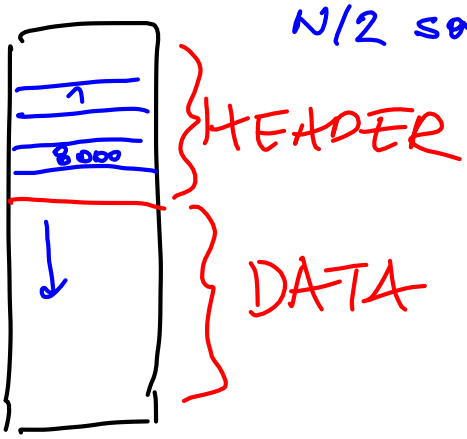
$\sigma + a > 0 \quad \sigma > -|a|$

Re

$\frac{1}{(s+1)(s+3)}$

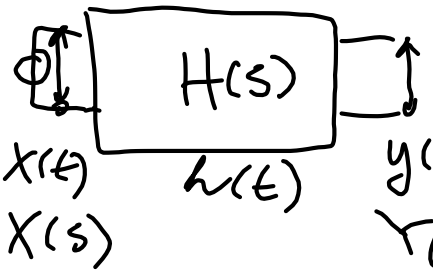


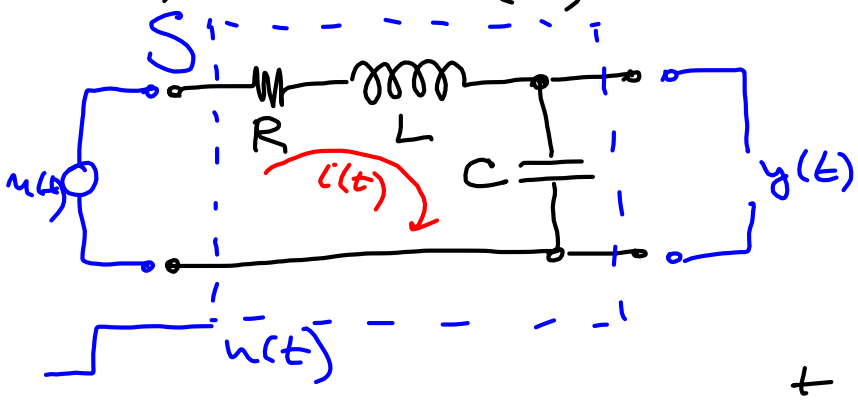




MATLAB

```
s = sin(2*pi*f*t)
sin(2*3.14*2400*t)
Ts = 1/Fs        t = t + Ts;
```





$$x(t) = R\,i(t) + L\frac{di}{dt} + \frac{1}{C}\int_0^t i(t)\,dt \quad / \frac{d}{dt}$$

$$\frac{dx(t)}{dt} = R\frac{di(t)}{dt} + L\frac{d^2i}{dt^2} + \frac{1}{C}i(t)$$

$$sX(s) - x(0) \qquad R\,sI(s) \qquad s^2I(s) - s\,i(0) - \frac{di}{dt}\Big|_{t=0} \qquad \frac{1}{C}I(s) \qquad y(t)$$

$$s^2I(s) \qquad i(0) = 0 \qquad \frac{di}{dt}\Big|_{t=0} = 0$$

$$Y(s) = X(s)\cdot H(s)$$

$$H(s) = \frac{Y(s)}{X(s)}$$

$$y(t) = \mathcal{L}^{-1}[Y(s)]$$