CPE381 #16

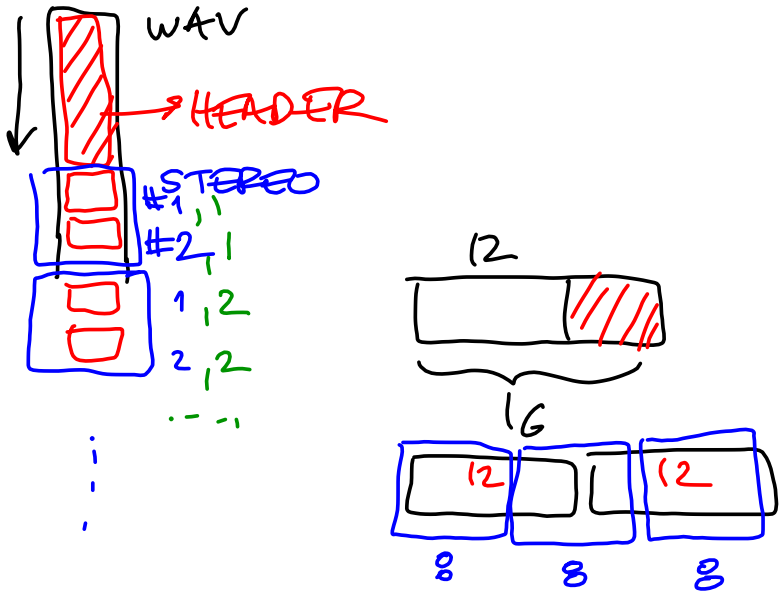
ave = 69
max = 94

6. $\frac{d^2y(t)}{dt^2} + 3\frac{dy(t)}{dt} + 2 \cdot y(t) = x(t)$

$\mathcal{L}\left(\frac{d^2y}{dt^2}\right) = s^2Y(s) - s \cdot y(0) - \left.\frac{dy}{dt}\right|_{t=0}$

$\mathcal{L}\left(\frac{dy}{dt}\right) = sY(s) - y(0)$

$y(0) = 1 \quad \left.\frac{dy}{dt}\right|_{t=0} = 0 \quad x(t) = u(t)$



- $3 \cdot e^{-t} \cdot \sin(\Omega_0 t) \cdot u(t)$

env. +1 −1

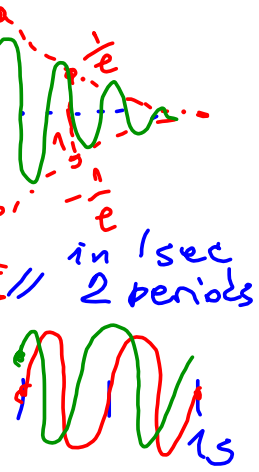
$t<0 \; f=0$

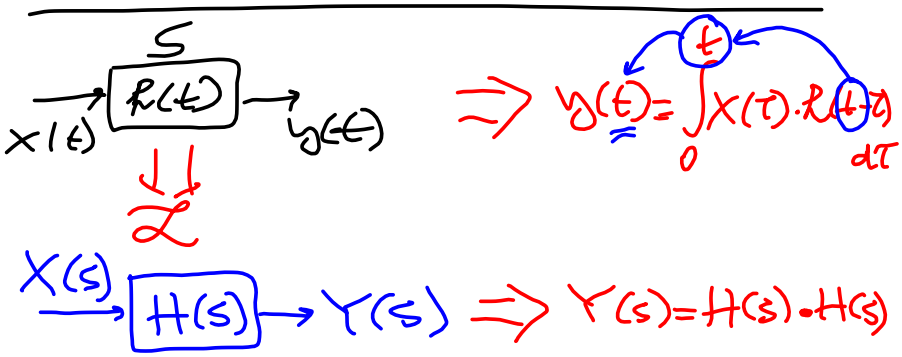
$\sin(4\pi t) = \sin(2\pi \cdot \frac{\pi}{T} t)$

$\sin(4\pi t) = \sin(2\pi \cdot 2 \cdot t)$ $f = 2Hz$ // in 1 sec 2 periods

$\sin(4\pi t + \pi/4) = \sin(\pi/4)$

$t=0$





$$X(s) \rightarrow \boxed{H(s)} \rightarrow Y(s)$$

$y(t)$

$$y^{(N)}(t) + \sum_{k=0}^{N-1} a_k y^{(k)}(t) = \sum_{k=0}^{M} b_k x^{(k)}(t)$$

2nd order diff. eq.

$N > M$

$$\mathcal{L}\left(\frac{d^2 y}{dt^2} + \dots = x(t) \right)$$

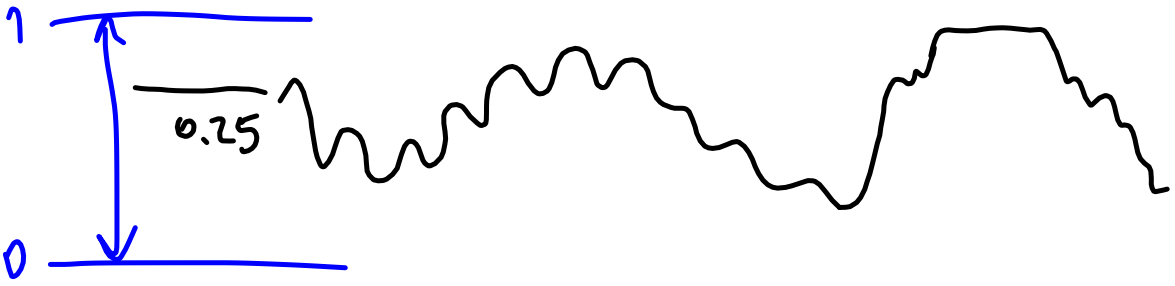
$$s^2 \cdot Y(s) \dots = X(s)$$

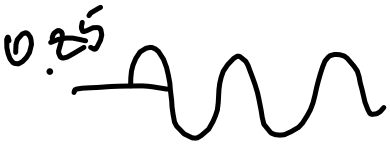
POLYNOMIAL

$$A(s) \cdot Y(s) = B(s) \cdot X(s) + I(s)$$

$$Y(s) = \frac{B(s)}{A(s)} \cdot X(s) + \frac{1}{A(s)} \cdot I(s)$$

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





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16 bit

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