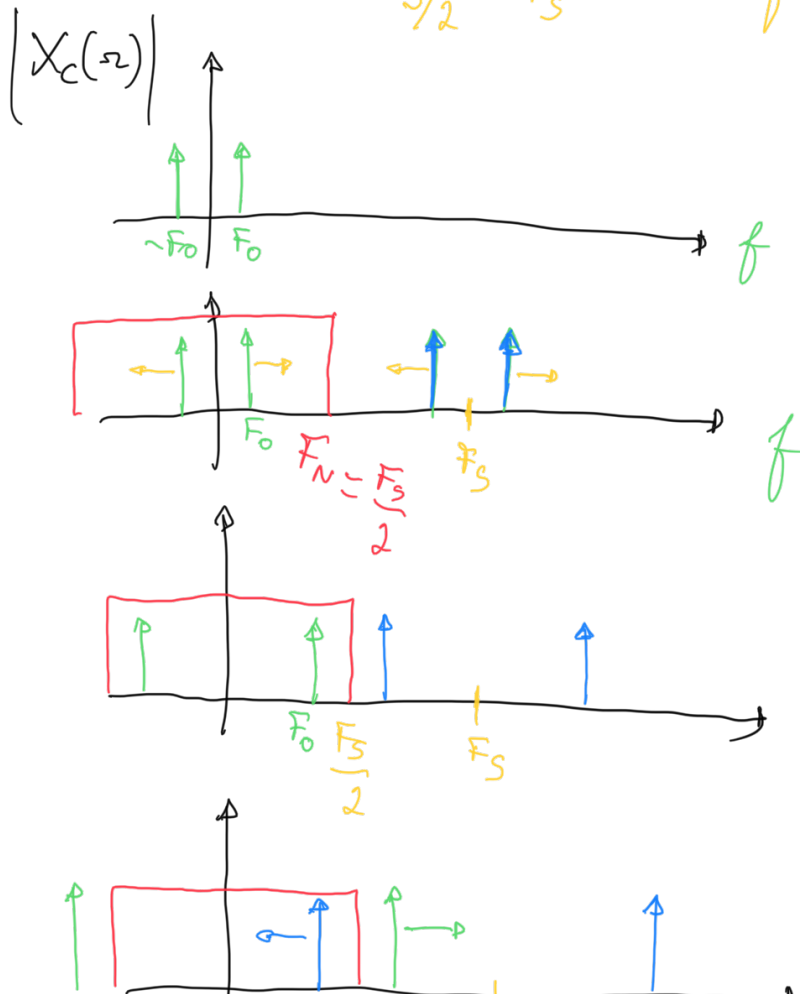
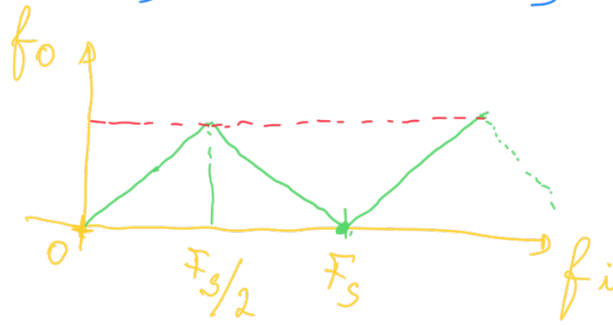
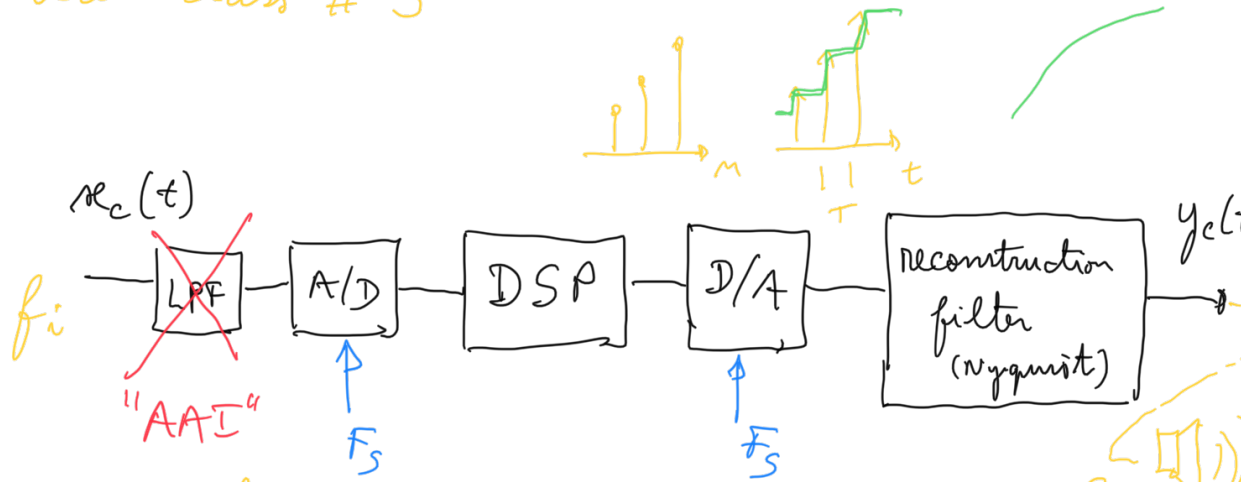


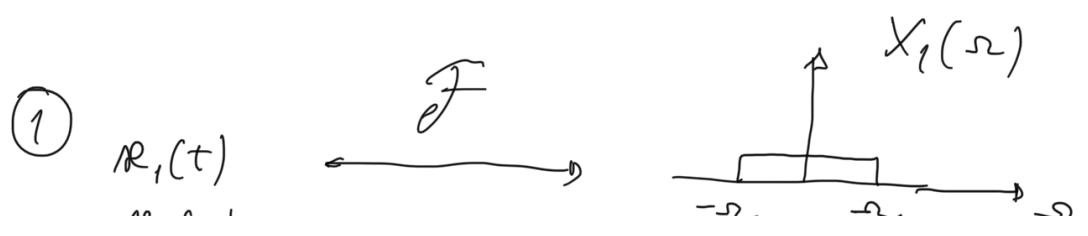
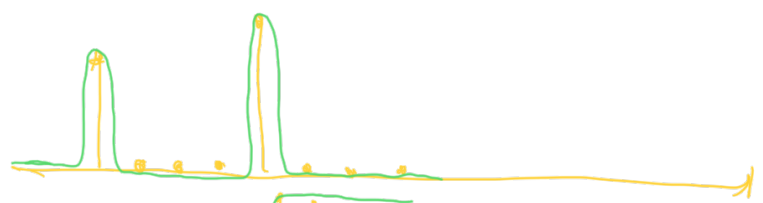
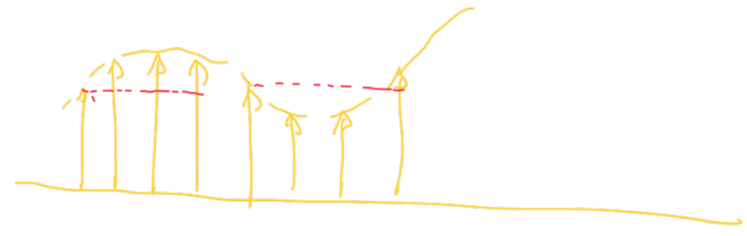
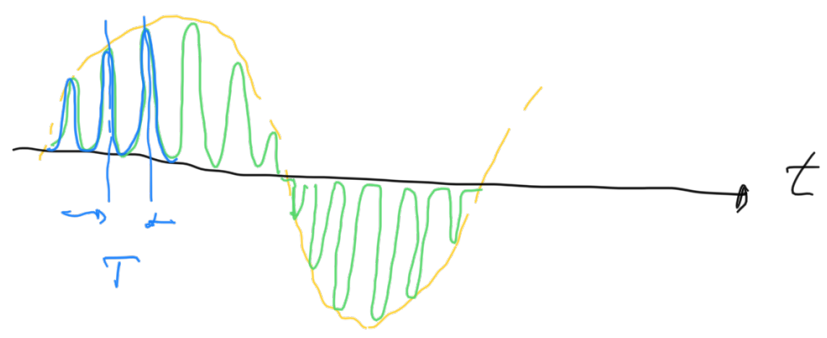
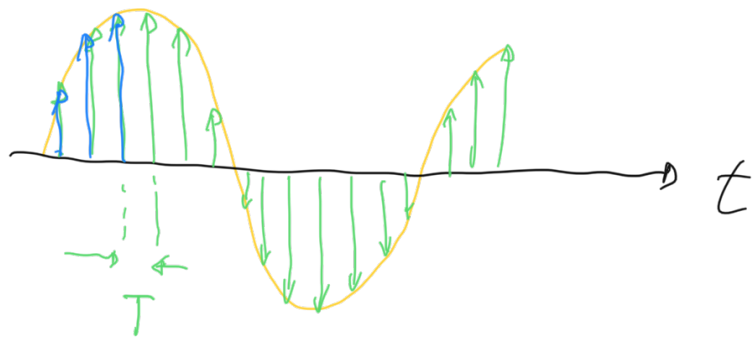
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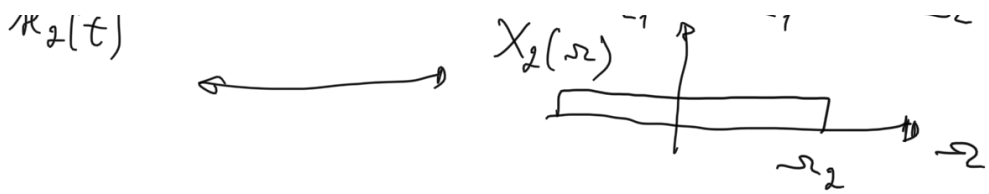
Lab class # 3



$F_s/2$   $F_s \approx 12.2 \text{ KHz}$

200 Hz

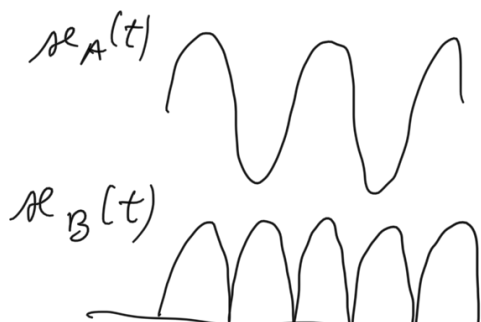
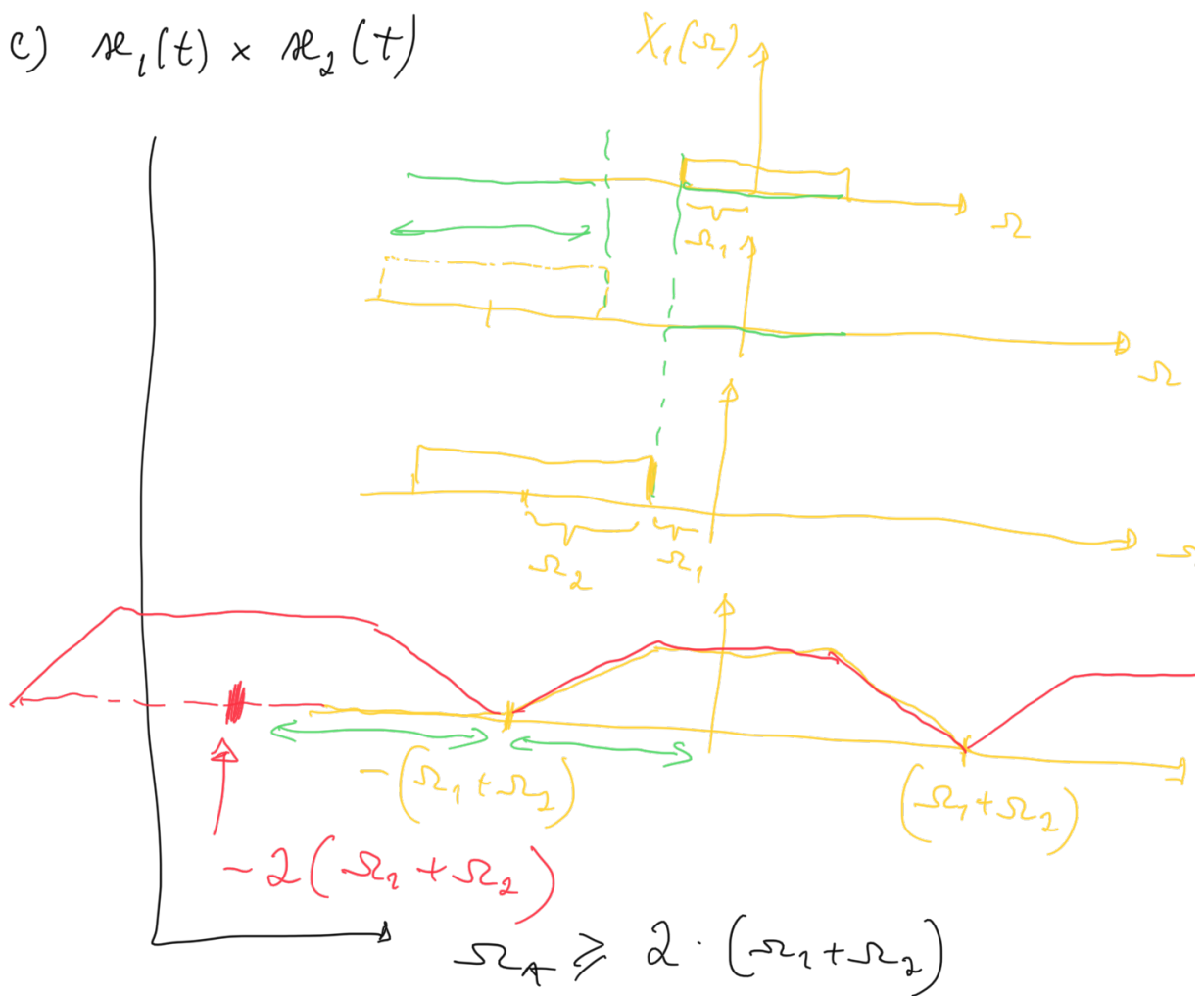




a)  $x_1(t) + x_2(t)$   $\omega_A \geq 2 \cdot \text{MAX}(\omega_1, \omega_2)$

b)  $x_1(t) * x_2(t)$   $\omega_A \geq 2 \cdot \text{MIN}(\omega_1, \omega_2)$

c)  $x_1(t) \times x_2(t)$



\_\_\_\_\_

\_\_\_\_\_

$f_0 = 0 \text{ Hz}$        $f_1 = 200 \text{ Hz}$        $f_2 = 350 \text{ Hz}$

$$x_c(t) = 1 - \sin 200t + \cos 700\pi t$$

$$F_s = 600 \text{ Hz}$$



a)  $x[n] = x_c(t) \Big|_{t=nT} = \frac{n}{F_s}$

$$= 1 - \sin 200 \frac{n\pi}{600} + \cos 700 \frac{n\pi}{600}$$

$$= 1 - \sin n \frac{\pi}{3} + \cos n \frac{7\pi}{6}$$

$[-\pi, \pi]$

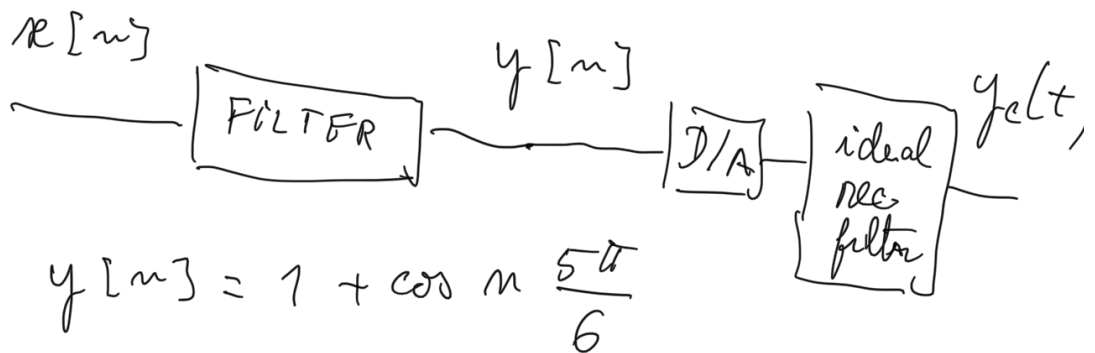
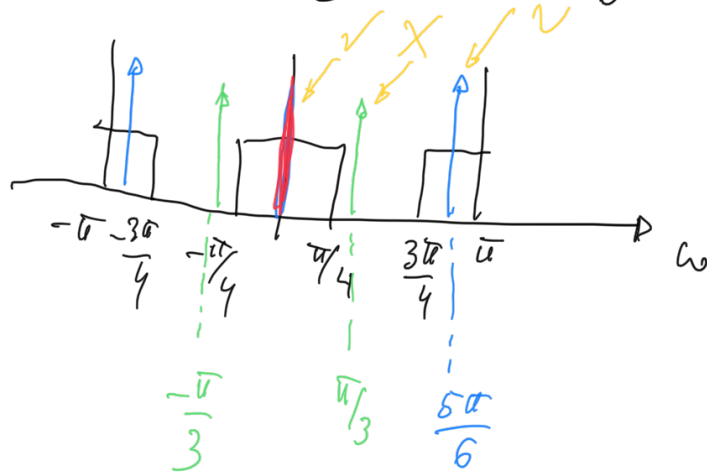
$$\omega_0 = 0 \text{ rad}$$

$$\omega_1 = \frac{\pi}{3} \text{ rad}$$

$$\omega_2 = \frac{7\pi}{6} > \pi \Rightarrow \frac{7\pi}{6} + k2\pi = \frac{7\pi + k12\pi}{6} \Big|_{k=1} = -\frac{5\pi}{6}$$

$$x[n] = 1 - \sin n \frac{\pi}{3} + \cos n \left( -\frac{5\pi}{6} \right)$$

$$= 1 - \sin n \frac{\pi}{3} + \cos n \frac{5\pi}{6}$$



$$y[n] = y_c(t) \Big|_{t = \frac{n}{F_s}}$$

~~$$y_c(t) = y[n] \Big|_{n = tF_s}$$~~

$$y[n] = 1 + \cos \left( \frac{n}{600} \frac{5\pi}{6} \right) 600$$

$$= 1 + \cos \left( t \cdot 5\pi \times 100 \right) \Big|_{t = \frac{n}{F_s}}$$

$$= 1 + \cos 500 \pi t = \left| t = \frac{n}{F_s} \right.$$

∴

$$Re(t) = 1 + \cos 500 \pi t$$

$$\uparrow \\ f = 250 \text{ Hz}$$