5/06/2015   Ex 2

$$x(t) = 2AB \text{ sinc}^2(Bt) + 2AB \text{ sinc}^2(Bt) \cos(2\pi Bt) +$$
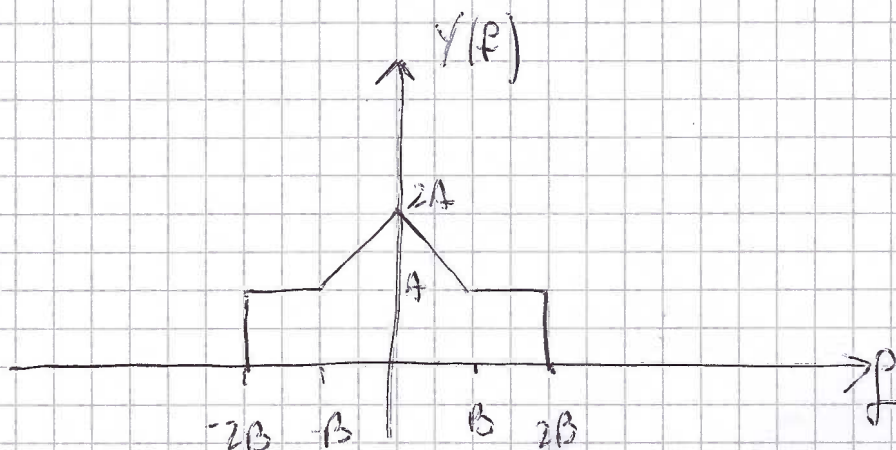
$$2AB \text{ sinc}^2(Bt) \cos(4\pi Bt)$$

$$X(f) = 2A\left(1 - \frac{|f|}{B}\right) \text{ rect}\left(\frac{f}{2B}\right) + 2A\left(1 - \frac{|f|}{B}\right) \text{ rect}\left(\frac{f}{2B}\right) \otimes \left(\frac{\delta(f-B)}{2} + \frac{\delta(f+B)}{2}\right)$$

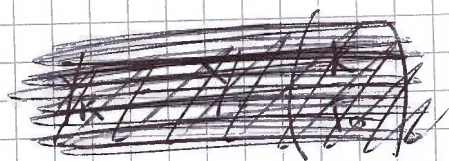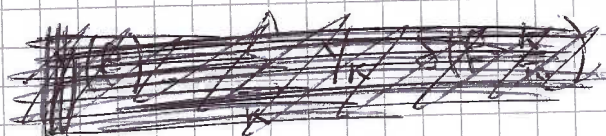$$+ 2A\left(1 - \frac{|f|}{B}\right) \otimes \left(\frac{\delta(f-2B)}{2} + \frac{\delta(f+2B)}{2}\right)$$
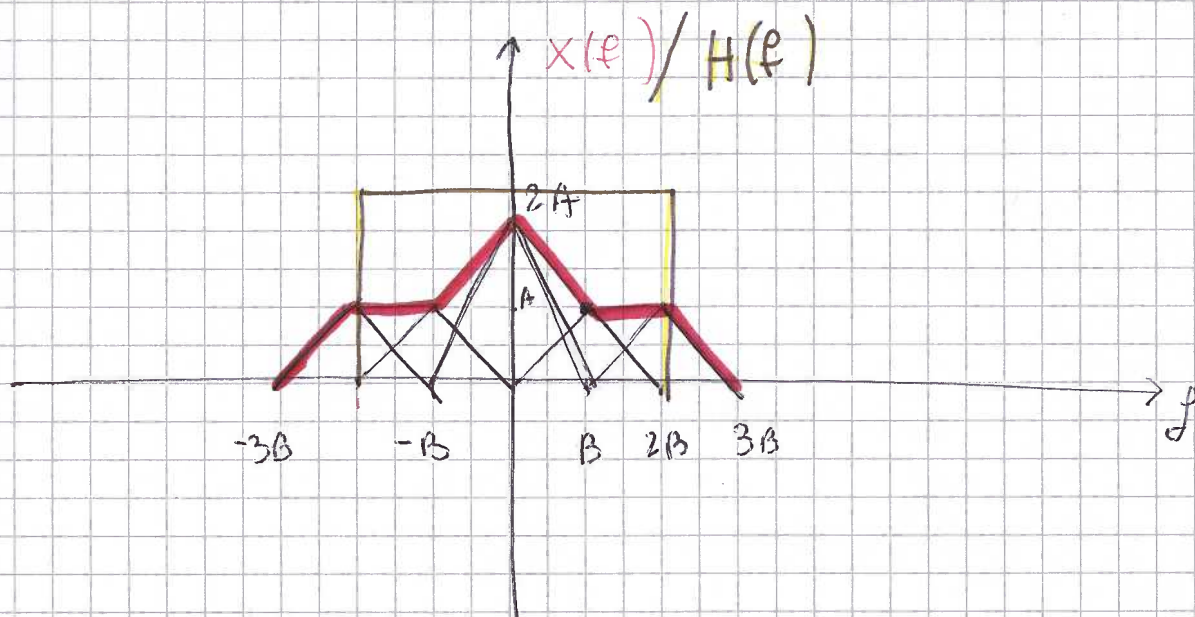
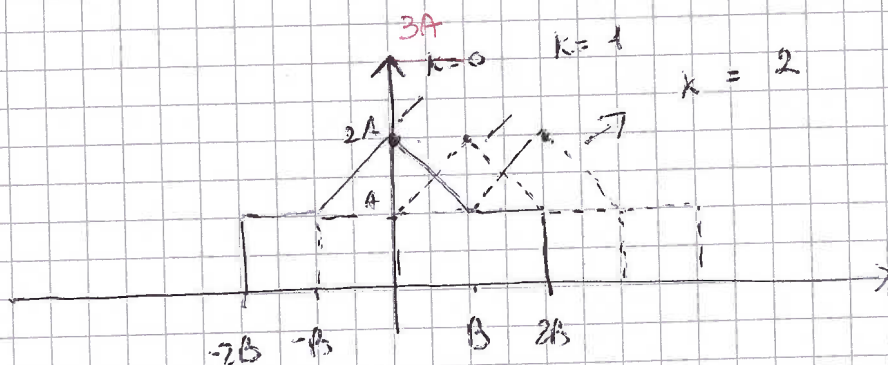$$H(f) = \text{rect}\left(\frac{f}{4B}\right)$$

$$Y(f) = X(f) \, H(f)$$

$$Y(f) = A \, rect\left(\frac{f}{4B}\right) + A\left(1 - \frac{|f|}{B}\right) rect\left(\frac{f}{2B}\right)$$

$$\overline{Y}(f) = \frac{1}{T} \sum_{k} Y\left(f - \frac{k}{T}\right) =$$

$$= B \sum_{k} Y(f - kB) \qquad \text{periodico di periodo } B$$

3 repliche   nel periodo $[0 - B]$

$$\overline{Y}(f) = 3AB$$

$$Z(f) = 3AB \cdot P(f) = 3AB \, rect\left(\frac{f}{B}\right)$$