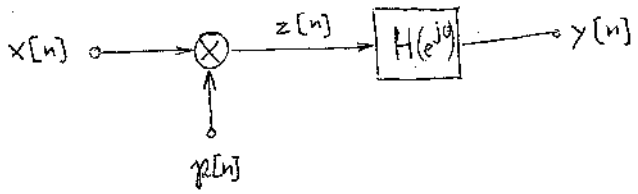
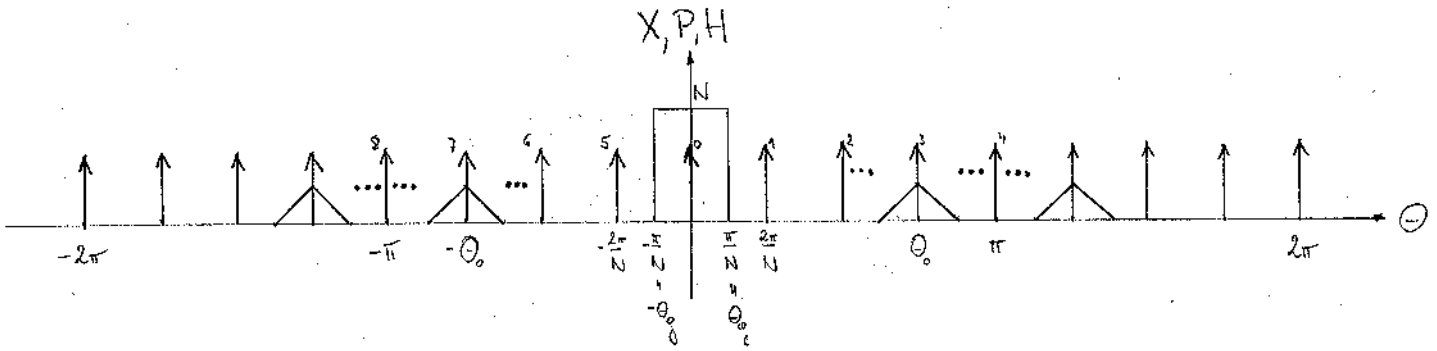
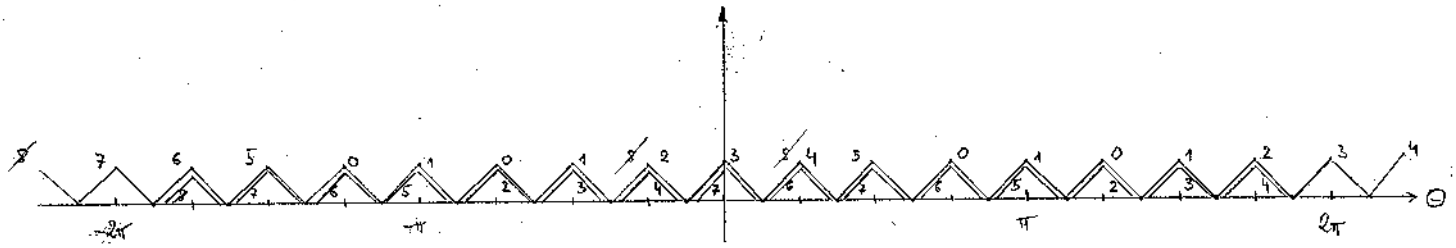
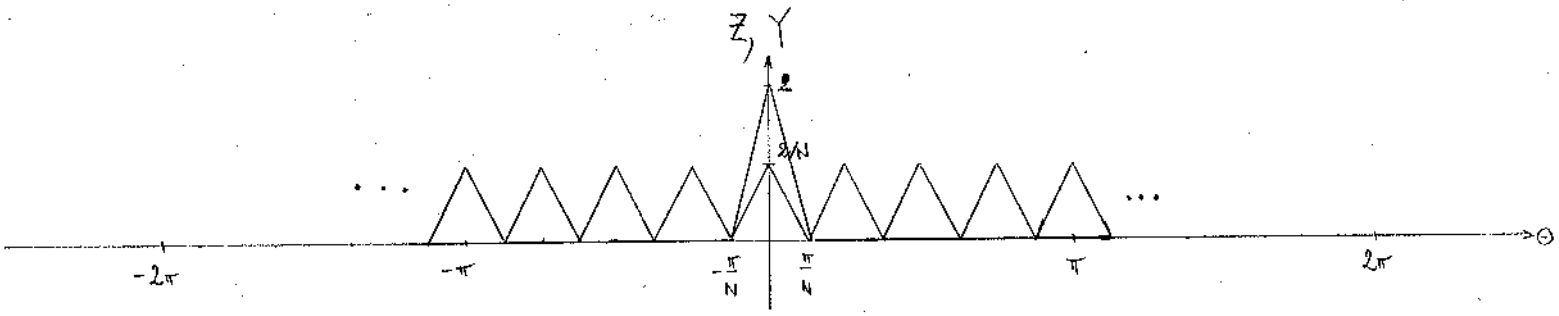
A 3.11



(a) $z[n] = x[n] \cdot p[n] \circ\!\!-\!\!\bullet Z(e^{j\Theta}) = \frac{1}{2\pi}(X \ast P)(e^{j\Theta})$, $P(e^{j\Theta}) = \frac{2\pi}{N} \sum_{k=-\infty}^{\infty} \delta\left(\Theta - \frac{2\pi}{N}k\right)$







(b) $Y(e^{j\Theta}) = \frac{1}{2\pi}\, \mathrm{rect}_{2\pi}\left(\frac{\Theta}{\pi/N}\right) \ast \mathrm{rect}_{2\pi}\left(\frac{\Theta}{\pi/N}\right) \cdot 4N$

$$y[n] = 4N \left\{ \frac{\sin\left(\frac{\pi}{2N}n\right)}{\pi n} \right\}^2$$