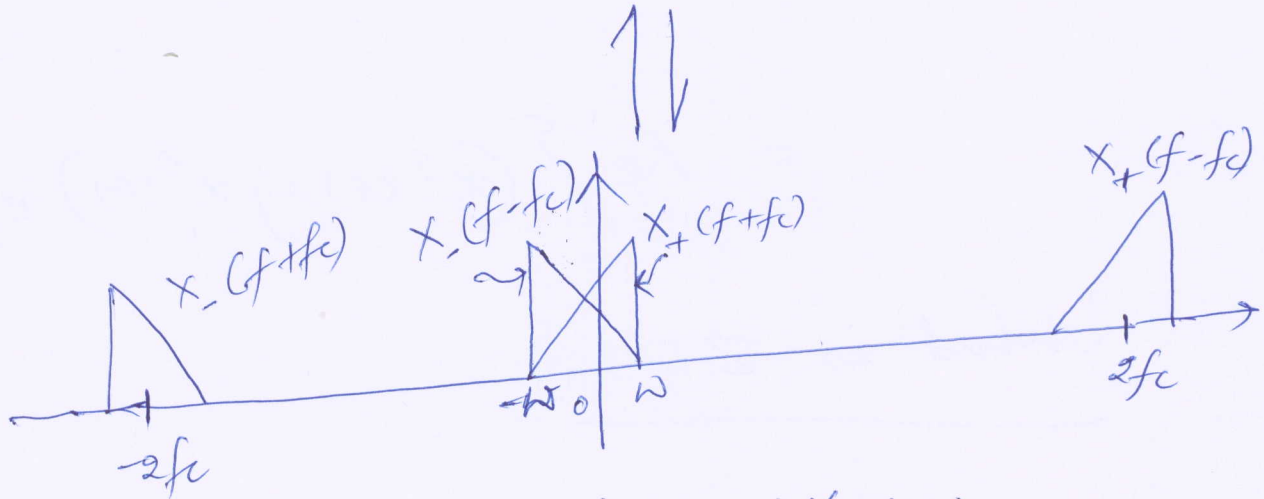


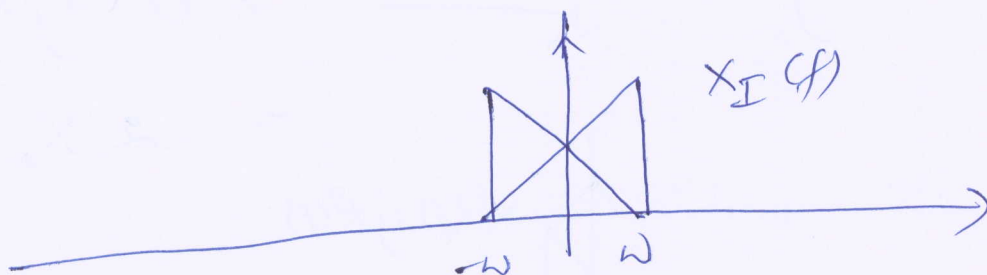
(2)

$x_I(t)$  and  $x_Q(t)$  are base band and bandlimited to  $[-W, W]$ .

$$2x(t)\cos\omega_c t = x(t)e^{j\omega_c t} + x(t)e^{-j\omega_c t}$$



low pass filtering



$$\begin{aligned} X_I(f) &= \text{Fourier}(x_I(t)) \\ &= X_+(f+f_c) + X_-(f-f_c) \end{aligned} \quad \text{--- (3)}$$

similarly.

$\begin{aligned} X_Q(f) &= \text{Fourier}(x_Q(t)) \\ &= \frac{X_+(f+f_c) - X_-(f-f_c)}{j} \end{aligned}$ <p style="text-align: center;">--- (4)</p>	<p>use.</p> $\frac{-2\sin\omega_c t}{j} = \frac{(e^{-j\omega_c t} - e^{j\omega_c t})}{j}$
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