

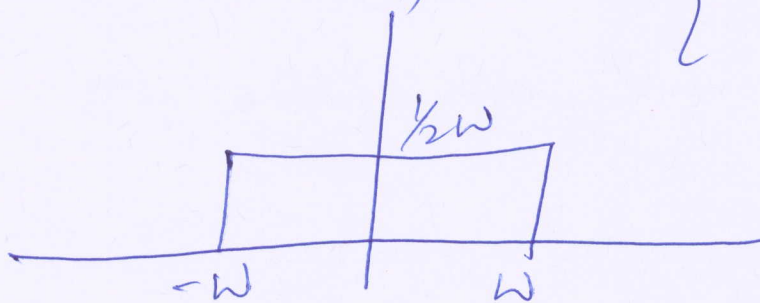
⑥

Since  $S(t) = \text{sinc}(2\omega t) \cos \omega t$   
 $= \text{Re}(\text{sinc}(2\omega t) e^{j\omega t})$

we have  $\tilde{S}(t) = \text{sinc}(2\omega t)$

and therefore

$$\tilde{S}(f) = \begin{cases} \frac{1}{2\omega}, & |f| < \omega \\ 0, & \text{otherwise} \end{cases}$$



Taking the inverse Fourier transform  
of  $h_b(t) = \frac{j}{2} \text{sinc}^2 2\omega t$ , we get.

$$H_b(f) = \begin{cases} \cancel{\frac{j}{2} \frac{(1-|f|-2\omega)}{2\omega}} \\ = \begin{cases} \frac{j}{2} \cdot \frac{1}{2\omega} \left(1 - \frac{|f|}{2\omega}\right), & |f| < 2\omega \\ 0, & \text{otherwise} \end{cases} \end{cases}$$

$|H_b(f)|$

