

since $\operatorname{Re} \{v(t) e^{jmft}\} = 0$,

(3)

we have

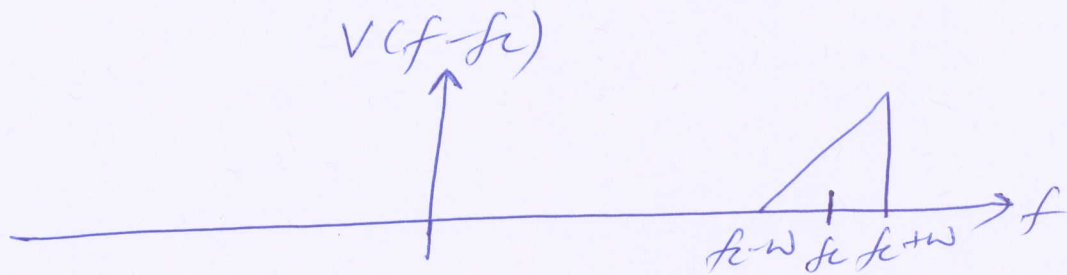
$$v(t) e^{jmft} + v^*(t) e^{-jmft} = 0. \quad \text{---}$$

Taking Fourier transform
of both sides, we get.

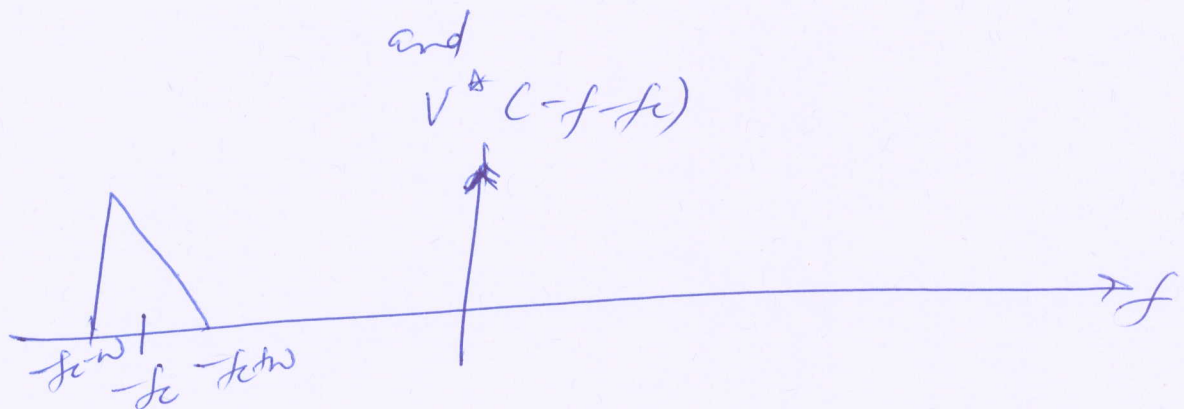
$$V(f-f_c) + V^*(-f-f_c) = 0. \quad \text{--- (5)}$$

since $V(t)$ is bandlimited to $[-W, W]$

we have



and



since $f_c > W$, $V^*(-f-f_c)$ and $V(f-f_c)$ are non-zero in disjoint bands.

Hence ~~we have~~ ~~$V(f-f_c)$~~ the only possible solution to (5) is $V(f) = 0$, i.e., $V(t) = 0$.