

EXTRA PROBLEMS FOR TUTORIAL 1.

Q.1 let $x_p(t)$ and $y_p(t)$ be two passband signals bandlimited to $[f_c - W, f_c + W]$. Assume $f_c \gg W$.

~~Show that~~

let $x(t)$ and $y(t)$ be the corresponding complex baseband representations of $x_p(t)$ and $y_p(t)$ respectively.

Show that

$$\int_{-\infty}^{\infty} x_p(t) y_p(t) dt = \frac{1}{2} \operatorname{Re} \left[\int_{-\infty}^{\infty} x(t) y^*(t) dt \right]$$