

$$\begin{aligned}
S_X(-f) &= \int_{-\infty}^{\infty} R_X(\tau) e^{-j2\pi(-f)\tau} d\tau \\
&= \int_{\infty}^{-\infty} R_X(-s) e^{-j2\pi(-f)(-s)} (-ds), s = -\tau \\
&= \int_{-\infty}^{\infty} R_X(-s) e^{-j2\pi fs} ds \\
&= \int_{-\infty}^{\infty} R_X(s) e^{-j2\pi fs} ds, R_X(-s) = R_X(s) \\
&= S_X(f)
\end{aligned}$$