• Take the IFT of a reversed signal

$$\mathcal{F}^{-1}f^{-}(s) = \int_{-\infty}^{\infty} f^{-}(t)e^{2\pi i s t}\,ds$$

$$= \int_{-\infty}^{\infty} f(-t)\,e^{2\pi i s t}\,ds$$

$$q = -t \qquad dq = -dt$$

$$= \int_{\infty}^{-\infty} f(q)\,e^{2\pi i s(-q)}\,(-dq)$$

$$= \int_{-\infty}^{\infty} f(q)\,e^{-2\pi i s q}\,dq$$

rename dummy

$$= \int_{-\infty}^{\infty} f(t)\,e^{-2\pi i s t}\,dt$$

$$= \mathcal{F}f\,(s)$$

or removing the explicit statement of the independent variable

$$\mathcal{F}^{-1}f^{-} = \mathcal{F}f$$

• Because this holds for $f(t)$ and tempered distributions can be obtained from f by

T_f and $\lim_{\alpha\to 0} T_{f_\alpha}$ it holds for distributions

$$\mathcal{F}^{-1}T^{-} = \mathcal{F}T \quad \checkmark$$

[see Osgood p82-85 & 179-182]