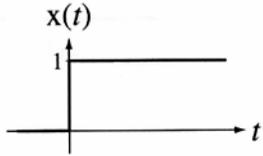
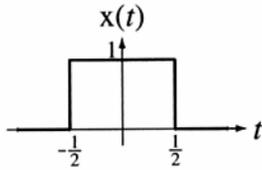
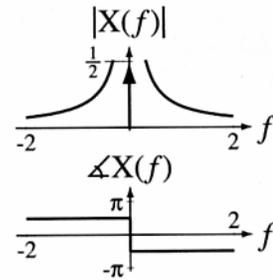


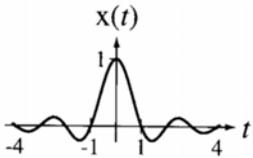
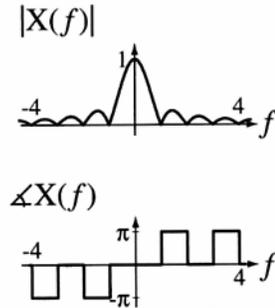
Continuous-Time Fourier Transform Pairs



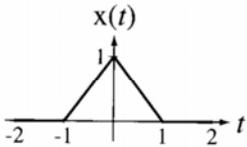
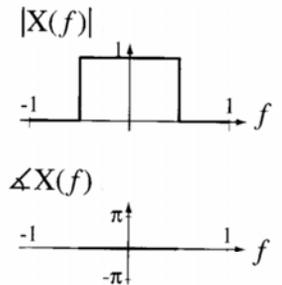
$$u(t) \xrightarrow{\mathcal{F}} (1/2)\delta(f) + 1/j2\pi f$$



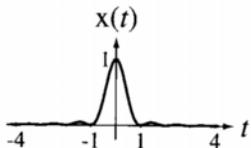
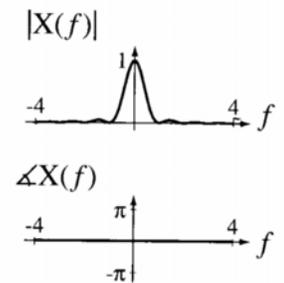
$$\text{rect}(t) \xrightarrow{\mathcal{F}} \text{sinc}(f)$$



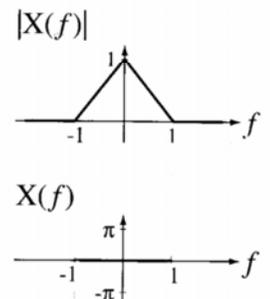
$$\text{sinc}(t) \xrightarrow{\mathcal{F}} \text{rect}(f)$$

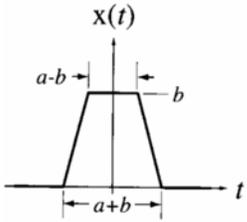


$$\text{tri}(t) \xrightarrow{\mathcal{F}} \text{sinc}^2(f)$$

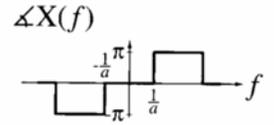
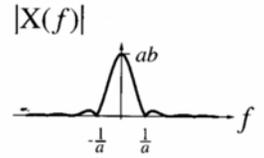


$$\text{sinc}^2(t) \xrightarrow{\mathcal{F}} \text{tri}(f)$$

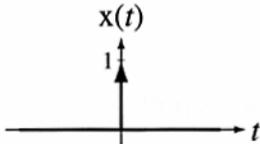




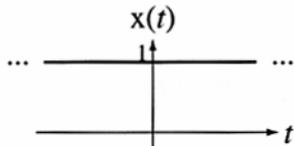
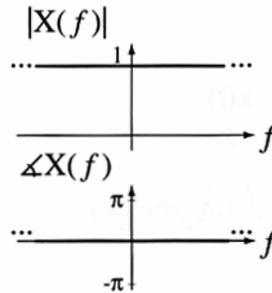
$$\frac{a+b}{2} \text{tri}\left(\frac{2t}{a+b}\right) - \frac{a-b}{2} \text{tri}\left(\frac{2t}{a-b}\right) \xrightarrow{\mathcal{F}} ab \text{sinc}(af) \text{sinc}(bf)$$



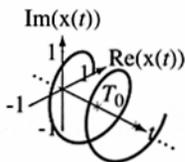
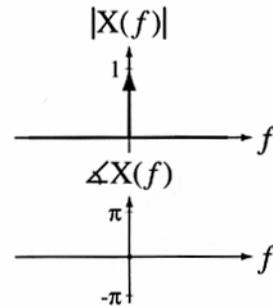
$$a > b > 0$$



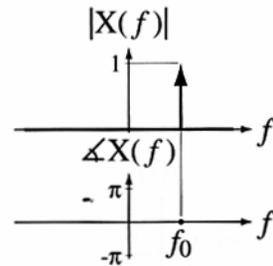
$$\delta(t) \xrightarrow{\mathcal{F}} 1$$

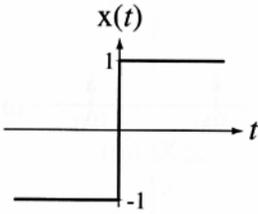


$$1 \xrightarrow{\mathcal{F}} \delta(f)$$

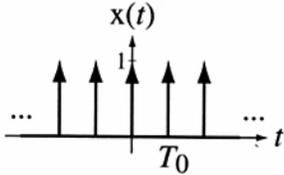
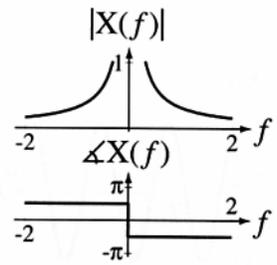


$$e^{j2\pi f_0 t} \xrightarrow{\mathcal{F}} \delta(f - f_0)$$



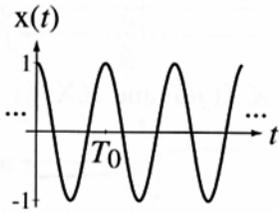
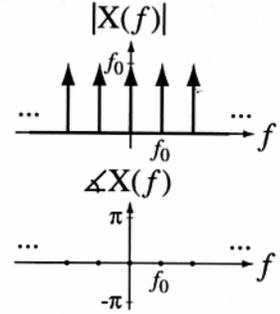


$$\text{sgn}(t) \xleftrightarrow{\mathcal{F}} 1 / j\pi f$$

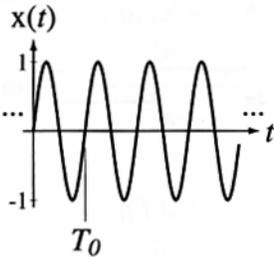
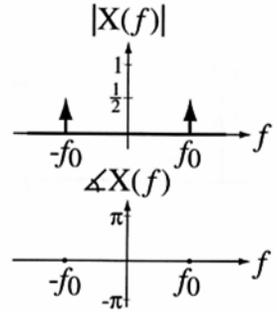


$$\delta_{T_0}(t) \xleftrightarrow{\mathcal{F}} f_0 \delta_{f_0}(f)$$

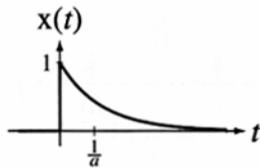
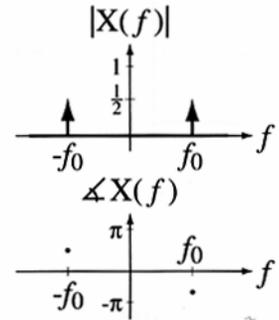
$$f_0 = 1/T_0$$



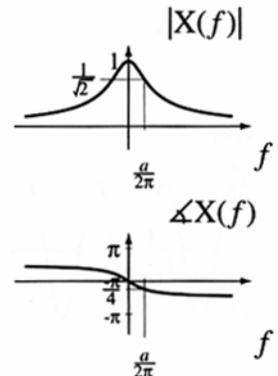
$$\cos(2\pi f_0 t) \xleftrightarrow{\mathcal{F}} \frac{1}{2} [\delta(f - f_0) + \delta(f + f_0)]$$

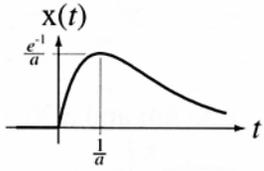


$$\sin(2\pi f_0 t) \xleftrightarrow{\mathcal{F}} \frac{j}{2} [\delta(f + f_0) - \delta(f - f_0)]$$

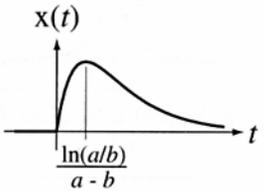
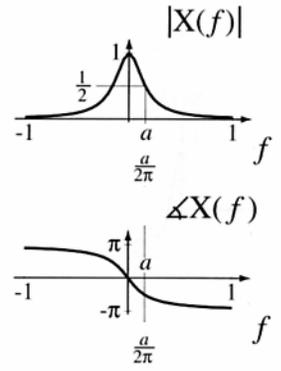


$$e^{-at} u(t) \xleftrightarrow{\mathcal{F}} \frac{1}{j2\pi f + a}, \quad \text{Re}(a) > 0$$

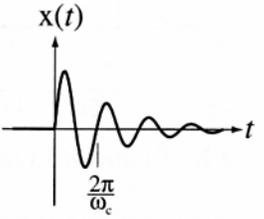
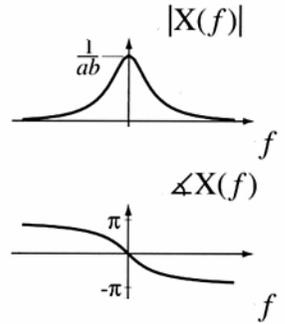




$$te^{-at} u(t) \xleftrightarrow{\mathcal{F}} \frac{1}{(j2\pi f + a)^2}, \quad \text{Re}(a) > 0$$



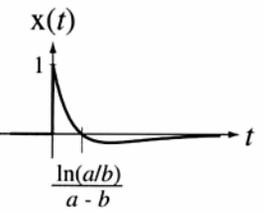
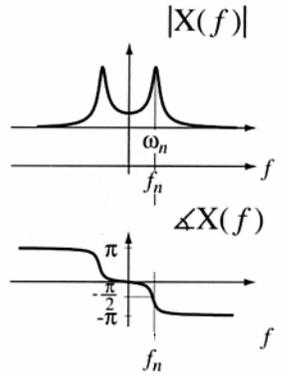
$$\frac{e^{-at} - e^{-bt}}{b - a} u(t) \xleftrightarrow{\mathcal{F}} \frac{1}{(j2\pi f + a)(j2\pi f + b)}, \quad \begin{matrix} \text{Re}(a) > 0 \\ \text{Re}(b) > 0 \\ a \neq b \end{matrix}$$



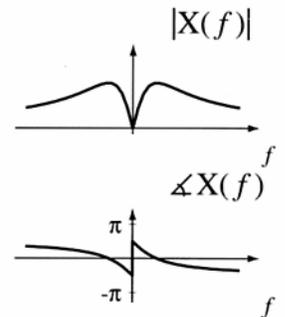
$$e^{-\alpha t} \sin(\omega_c t) u(t) \xleftrightarrow{\mathcal{F}} \frac{\omega_c}{(j\omega + \alpha)^2 + \omega_c^2}$$

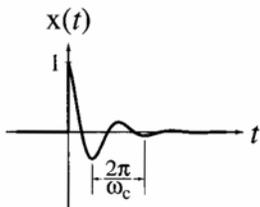
$$e^{-\zeta\omega_n t} \sin(\omega_n \sqrt{1 - \zeta^2} t) u(t) \xleftrightarrow{\mathcal{F}} \frac{\omega_c}{(j\omega)^2 + j\omega(2\zeta\omega_n) + \omega_n^2}$$

$$(\omega_c = \omega_n \sqrt{1 - \zeta^2}, \quad \alpha = \zeta\omega_n)$$



$$\frac{ae^{-at} - be^{-bt}}{a - b} u(t) \xleftrightarrow{\mathcal{F}} \frac{j2\pi f}{(j2\pi f + a)(j2\pi f + b)}, \quad \begin{matrix} \text{Re}(a) > 0 \\ \text{Re}(b) > 0 \\ a \neq b \end{matrix}$$

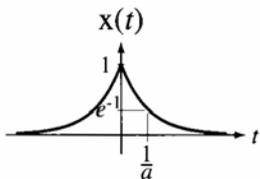
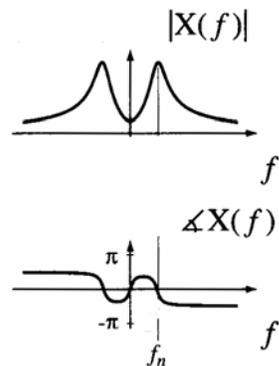




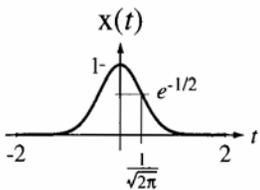
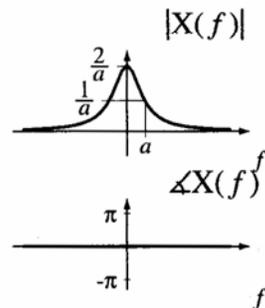
$$e^{-\alpha t} \cos(\omega_c t) u(t) \xleftrightarrow{\mathcal{F}} \frac{j\omega + \alpha}{(j\omega + \alpha)^2 + \omega_c^2}$$

$$e^{-\zeta\omega_n t} \cos(\omega_n \sqrt{1-\zeta^2} t) u(t) \xleftrightarrow{\mathcal{F}} \frac{j\omega + \zeta\omega_n}{(j\omega)^2 + j\omega(2\zeta\omega_n) + \omega_n^2}$$

$$(\omega_c = \omega_n \sqrt{1-\zeta^2}, \alpha = \zeta\omega_n)$$



$$e^{-a|t|} \xleftrightarrow{\mathcal{F}} \frac{2a}{(2\pi f)^2 + a^2}, \text{Re}(a) > 0$$



$$e^{-\pi t^2} \xleftrightarrow{\mathcal{F}} e^{-\pi f^2}$$

