Fourier Transform

$$F\{f(x)\} = \int_{-\infty}^{\infty} f(x)\, e^{isx}\, dx$$

or

$$F\{f(x)\} = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{\infty} e^{isx}\, f(x)\, dx$$

or

$$F\{f(x)\} = \int_{-\infty}^{\infty} f(x)\, e^{-isx}\, dx$$

or

$$F\{f(x)\} = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^{\infty} f(x)\, e^{-isx}\, dx$$

Fourier Sine Transform

$$F_s\{f(x)\} = \int_0^{\infty} f(x)\, \sin sx\, dx = F_s(s)$$

or

$$F_s\{f(x)\} = \sqrt{\frac{2}{\pi}} \int_0^{\infty} f(x)\, \sin sx\, dx = F_s(s)$$

Fourier Cosine Transform

$$F_c\{f(x)\} = \int_0^{\infty} f(x)\, \cos sx\, dx = F_c(s)$$

or

$$F_c\{f(x)\} = \sqrt{\frac{2}{\pi}} \int_0^{\infty} f(x)\, \cos sx\, dx = F_c(s)$$

$-t \to t$

*) Remember the difference of $-s \to s$ ⟵⟶ in inverse & further topics.