

Fourier series

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Any time function, $f(t)$, with a period $2p$, we have

$$f(t) = \sum \left\{ a_n \cos\left(\frac{n\pi t}{p}\right) + b_n \sin\left(\frac{n\pi t}{p}\right) \right\}$$

where $\omega_n = \frac{n\pi}{p}$.

Any space function, $f(x)$, with a wave length 2λ , we have

$$f(x) = \sum \left\{ a_n \cos\left(\frac{n\pi x}{\lambda}\right) + b_n \sin\left(\frac{n\pi x}{\lambda}\right) \right\}$$

where $k_n = \frac{n\pi}{\lambda}$.

Any time function, $f(t)$, we have

Fourier transform:

$$F(\omega) = \int_{-\infty}^{\infty} f(t) e^{-i\omega t} dt$$

Inverse Fourier transform:

$$f(t) = \frac{1}{2\pi} \int_{-\infty}^{\infty} F(\omega) e^{i\omega t} d\omega$$

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【存檔：c:/ctex/course/math2/fouri2.te】 【建檔:Mar./3/'97】