Some Formulas

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

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

$$X_k = \sum_{n=0}^{N-1} x(n) e^{-i\omega_0 nk}$$

$$x(n) = \frac{1}{N} \sum_{k=0}^{N-1} X_k e^{i\omega_0 nk}$$

$$X_k = \frac{1}{p} \sum_{n=0}^{p-1} x(n) e^{-i\omega_0 nk}$$

$$x(n) = \frac{1}{2\pi} \int_{-\pi}^{\pi} X(\omega) e^{in\omega} d\omega$$

$$X(\omega) = \sum_{n=\infty}^{\infty} x(n) e^{-i\omega n}$$

$$x(t) = \sum_{k=-\infty}^{\infty} X_k e^{i\omega_0 kt}$$

$$X_k = \frac{1}{p} \int_{0}^{p} x(t) e^{-i\omega_0 kt} dt$$

$$\int_{-\infty}^{\infty} e^{iat} dt = \begin{cases} 2\pi & a = 0 \\ 0 & else \end{cases}$$

$$\int_{-\infty}^{\infty} f(t)\delta(t-a) dt = f(a)$$

$$H(\omega) = \frac{H_1(\omega)}{1 - H_1(\omega) H_2(\omega)}$$