| Integral | Expression |
|---|---|
| $\int e^{-j\omega t}dt$ | $\frac{1}{-j\omega}e^{-j\omega t}$ |
| $\int te^{-j\omega t}dt$ | $(\frac{t}{-j\omega}-\frac{1}{(-j\omega)^2})e^{-j\omega t}$ |
| $\int \sin(at)dt$ | $-\frac{1}{a}\cos(at)$ |
| $\int \cos(at)dt$ | $\frac{1}{a}\sin(at)$ |

| Integral | Expression |
|---|---|
| $\int t\sin(at)dt$ | $\frac{1}{a^2}\sin(at)-\frac{t}{a}\cos(at)$ |
| $\int t\cos(at)dt$ | $\frac{1}{a^2}\cos(at)+\frac{t}{a}\sin(at)$ |
| $\int \sin(\omega_0 t)e^{at}dt$ | $\frac{a\sin(\omega_0 t)-\omega_0\cos(\omega_0 t)}{a^2+\omega_0^2}e^{at}$ |
| $\int \cos(\omega_0 t)e^{at}dt$ | $\frac{a\cos(\omega_0 t)+\omega_0\sin(\omega_0 t)}{a^2+\omega_0^2}e^{at}$ |

| | | |
|---|---|---|
| Half-rectified sine wave | $x(t)=\begin{cases}A\sin(\frac{2\pi}{T_0}t) & 0\le t<T_0/2\\ 0 & \frac{-T_0}{2}\le t<0\end{cases}$ | $a_n=\begin{cases}\frac{A}{\pi(1-n^2)} & n\ even\\ 0 & n \text{ odd and } \neq \pm1\\ -j0.25nA & n=\pm1\end{cases}$ |
| Full-rectified sine wave | $x(t)=\begin{cases}A\sin(\frac{2\pi}{T_0}t) & 0\le t<T_0/2\\ -A\sin(\frac{2\pi}{T_0}t) & -\frac{T_0}{2}\le t<0\end{cases}$ | $a_n=\begin{cases}\frac{2A}{\pi(1-n^2)} & n \text{ even}\\ 0 & n\ odd\end{cases}$ |
| Pulse train | $x(t)=\begin{cases}A & -\tau/2\le t<\tau/2\\ 0 & \text{otherwise}\end{cases},\ \tau<T_0$ | $a_0=\frac{A\tau}{T_0}, a_n=\frac{A\tau}{T_0}\frac{\sin(n\omega_0\tau/2)}{n\omega_0\tau/2}$ |
| Triangular wave | $x(t)=\begin{cases}-\frac{2A}{\tau}(t-\frac{\tau}{2}) & 0\le t<\frac{\tau}{2}\\ \frac{2A}{\tau}(t+\frac{\tau}{2}) & -\frac{\tau}{2}\le t<0\\ 0 & \text{otherwise}\end{cases}$ $,\ \tau<T_0$ | $a_0=\frac{A\tau}{2T_0}$, $a_n=\frac{8A}{T_0\tau}\frac{\sin^2(n\omega_0\tau/4)}{(n\omega_0)^2}=\frac{4A}{\pi n^2\omega_0\tau}\sin^2(\frac{n\omega_0\tau}{4})$ |
| Sawtooth train | $x(t)=\begin{cases}\frac{A}{\tau}(t+\frac{\tau}{2}) & -\frac{\tau}{2}\le t<\frac{\tau}{2}\\ 0 & \text{otherwise}\end{cases},\tau<T_0$ | $a_0=\frac{A\tau}{2T_0}$, $a_n=\frac{A}{T_0}[\frac{j}{n\omega_0}e^{-j\frac{n\omega_0\tau}{2}}-j\frac{2}{\tau(n\omega_0)^2}\sin(\frac{n\omega_0\tau}{2})]$ |