

Transform Tables

- [List of Integral / Space Transforms](#)
- [Fourier Analysis](#)
- [Units and System Conversions](#)

Useful Equations

| | |
|--------------------------|---|
| Eulers Formula | $e^{j\varphi} = \cos(\varphi) + j\sin(\varphi)$ |
| Eulers Cosine | $\cos(x) = \frac{e^{jx} + e^{-jx}}{2}$ |
| Eulers Sine | $\sin(x) = \frac{je^{jx} - je^{-jx}}{2}$ |
| Angular Frequency | $\omega = 2\pi f$ |
| Period | $T = \frac{1}{f}$ |

Common Integrals

| |
|---|
| $\int u \, dv = uv - \int v \, du$ |
| $\int \frac{1}{ax+b} \, dx = \frac{1}{a} \ln(ax+b)$ |
| $\int \sin(x) \, dx = -\cos(x)$ |
| $\int \cos(x) \, dx = \sin(x)$ |
| $\int e^{ax} \, dx = \frac{1}{a} e^{ax}$ |
| $\int xe^x \, dx = (x-1)e^x$ |

Common Derivatives

| |
|---|
| $\frac{d}{dx}(f(x)g(x)) = f(x)\dot{g}(x) + \dot{f}(x)g(x)$ |
| $\frac{d}{dx}\left(\frac{f(x)}{g(x)}\right) = \frac{f(x)\dot{g}(x) - \dot{f}(x)g(x)}{(g(x))^2}$ |
| $\frac{d}{dx}(\sin(x)) = \cos(x)$ |
| $\frac{d}{dx}(\cos(x)) = -\sin(x)$ |
| $\frac{d}{dx}(\tan(x)) = \sec^2(x)$ |
| $\frac{d}{dx}(\sin^{-1}(x)) = \frac{1}{\sqrt{1-x^2}}$ |
| $\frac{d}{dx}(\cos^{-1}(x)) = \frac{-1}{\sqrt{1-x^2}}$ |
| $\frac{d}{dx}(\tan^{-1}(x)) = \frac{1}{1+x^2}$ |
| $\frac{d}{dx}(a^x) = a^x \ln(a)$ |
| $\frac{d}{dx}(\ln x) = \frac{1}{x}$ |
| $\frac{d}{dx}(\log_a(x)) = \frac{1}{x \ln(a)}$ |

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