- The real and imaginary parts of $z = x + iy$ are $\Re(z) = x$ and $\Im(z) = y$, with x and y pure real.
- The Laplace transform operator is $\mathscr{L}$, with $\mathscr{L}[f(t)] = \tilde{f}(s) = \int_0^\infty dt e^{-st} f(t)$.
- The inverse Laplace transform is $\mathscr{L}^{-1}$, with $\mathscr{L}^{-1}[\tilde{f}(s)] = (2\pi i)^{-1} \int_{-i\infty}^{i\infty} ds\, e^{st} \tilde{f}(s)$.
- The convolution operator $\star$ for the Laplace transform is defined as $f \star g(t) = \int_0^\infty dt' f(t-t')g(t')$.
- The Fourier transform is $\mathrm{FT}[f(x)] = \hat{f}(k) = \int_{-\infty}^{\infty} dx\, e^{-ikx} f(x)$.
- The inverse Fourier transform is $\mathrm{FT}^{-1}[\hat{f}(k)] = f(x) = (2\pi)^{-1} \int_{-\infty}^{\infty} dk\, e^{+ikx} \hat{f}(k)$.
- The convolution operator $\star$ for the Fourier transform is defined as $f \star g(x) = \int_{-\infty}^{\infty} dx' f(x-x')g(x')$.
- $\langle t \rangle_f = \int_0^\infty dt\, t\, f(t) / \int_0^\infty dt\, f(t) = (-d/ds) \ln \tilde{f}(s)|_{s=0}$
- $\langle \delta t^2 \rangle_f = \int_0^\infty dt\, \delta t^2\, f(t) / \int_0^\infty dt\, f(t) = (-d/ds)^2 \ln \tilde{f}(s)|_{s=0}$, with $\delta t = t - \langle t \rangle_f$
- The truth function $\Theta(x)$ or $\Theta[x]$ is defined as 1 if x is true and 0 if x is false.
- $e^x = \sum_{n=0}^\infty x^n/n!$
- $1/(1-x) = \sum_{n=0}^\infty x^n$, with region of convergence $|x| < 1$.
- $\int_{-\infty}^{\infty} dx\, e^{-ax^2+bx} = (\pi/a)^{1/2} \exp(b^2/4a)$
- If $n \sim \mathrm{Pois}(\lambda)$, $P(n) = (\lambda^n/n!) \exp(-\lambda)$.
- $a + ib = \sqrt{a^2+b^2} \exp[i \tan^{-1}(b/a)]$
- $R^2 = 2Dt$