

雷建德方程-貝色列方程

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Bessel function	Lengndre function
$J_\nu(x)$	$P_n(x)$
membrane vibration	Gaussian integration, spherical harmonic
$x^2y'' + xy' + (x^2 - \nu^2)y = 0$	$(1 - x^2)y'' - 2xy' + (n)(n + 1)y = 0$
$\frac{d}{dx}(xy') + (x - \frac{\nu^2}{x})y = 0$	$\frac{d}{dx}\{(1 - x^2)y'\} + n(n + 1)y = 0$
$x = 0$ regular singular	$x = 0$ ordinary point
$y(x) = \sum_{n=0}^{\infty} c_n x^{n+r}$	$y(x) = \sum_{n=0}^{\infty} c_n x^n$
$J_\nu, J_{-\nu}, J_n, Y_n, J_0, Y_0$	$P_n(x), n \in N, n \text{ not } \in N$
$J_p(x) = x/2 ^p \sum_{n=0}^{\infty} (-1)^n \frac{(x/2)^{2n}}{n! \Gamma(p+n+1)}$	$P_n(x) = \frac{1}{2^n n!} \frac{d^n}{dx^n} \{(x^2 - 1)^n\}$
$\int_0^{\infty} x J_p(x) J_q(x) dx = 0$	$\int_{-1}^1 P_i(x) P_j(x) dx = 0$