Orthogonal Polynomials as Confluent Hypergeometric Functions (see chapter 13)

22.5.54 $L_n^{(\alpha)}(x)=\binom{n+\alpha}{n}M(-n, \alpha+1, x)$

Orthogonal Polynomials as Parabolic Cylinder Functions (see chapter 19)

22.5.55 $H_n(x)=2^nU\left(\frac{1}{2}-\frac{1}{2}n, \frac{3}{2}, x^2\right)$

22.5.56 $H_{2m}(x)=(-1)^m\frac{(2m)!}{m!}M\left(-m, \frac{1}{2}, x^2\right)$

22.5.57

* $H_{2m+1}(x)=(-1)^m\frac{(2m+1)!}{m!}2xM\left(-m, \frac{3}{2}, x^2\right)$

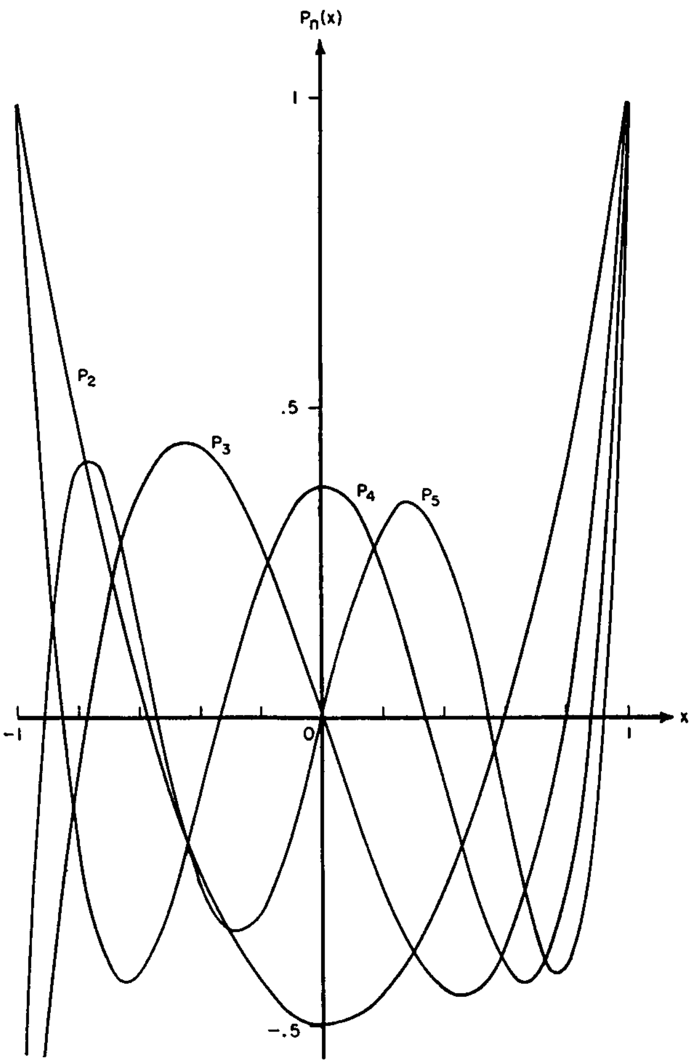

FIGURE 22.8. *Legendre Polynomials* $P_n(x)$, $n=2(1)5$.

22.5.58

$H_n(x)=2^{n/2}e^{x^2/2}D_n(\sqrt{2}x)=2^{n/2}e^{x^2/2}U\left(-n-\frac{1}{2}, \sqrt{2}x\right)$

22.5.59 $He_n(x)=e^{x^2/4}D_n(x)=e^{x^2/4}U\left(-n-\frac{1}{2}, x\right)$

Orthogonal Polynomials as Legendre Functions (see chapter 8)

22.5.60

$C_n^{(\alpha)}(x)=$

$$\frac{\Gamma(\alpha+\frac{1}{2})\Gamma(2\alpha+n)}{n!\Gamma(2\alpha)}\left[\frac{1}{4}(x^2-1)\right]^{\frac{1}{4}-\frac{\alpha}{2}}P_{n+\alpha-\frac{1}{2}}^{(\frac{1}{2}-\alpha)}(x)$$

$(\alpha\neq 0)$

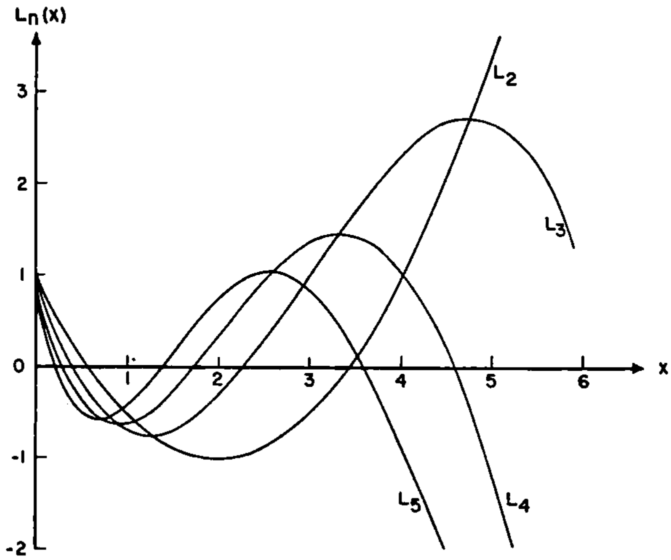

FIGURE 22.9. *Laguerre Polynomials* $L_n(x)$, $n=2(1)5$.

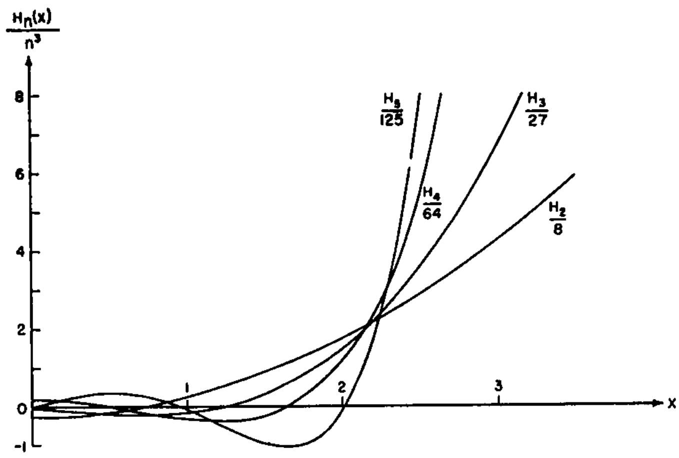

FIGURE 22.10. *Hermite Polynomials* $\frac{H_n(x)}{n^3}$, $n=2(1)5$.

*See page II.