

FIGURE 22.2. *Jacobi Polynomials* $P_n^{(\alpha, \beta)}(x)$, $\alpha=1(.2)2$, $\beta=-.5$, $n=5$.

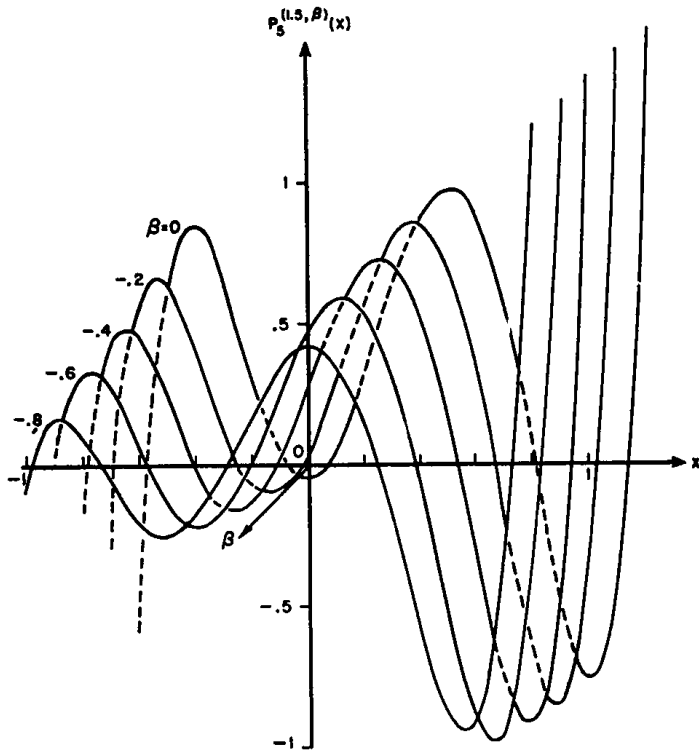


FIGURE 22.3. *Jacobi Polynomials* $P_n^{(\alpha, \beta)}(x)$, $\alpha=1.5$, $\beta=-.8(.2)0$, $n=5$.

Explicit Expressions Involving Trigonometric Functions

$$f_n(\cos \theta) = \sum_{m=0}^n a_m \cos(n-2m)\theta$$

	$f_n(\cos \theta)$	a_m	Remarks
22.3.12	$C_n^{(\alpha)}(\cos \theta)$	$\frac{\Gamma(\alpha+m)\Gamma(\alpha+n-m)}{m!(n-m)![\Gamma(\alpha)]^2}$	$\alpha \neq 0$
22.3.13	$P_n(\cos \theta)$	$\frac{1}{4^n} \binom{2m}{m} \binom{2n-2m}{n-m}$	

22.3.14 $C_n^{(0)}(\cos \theta) = \frac{2}{n} \cos n\theta$

22.3.15 $T_n(\cos \theta) = \cos n\theta$

22.3.16 $U_n(\cos \theta) = \frac{\sin(n+1)\theta}{\sin \theta}$

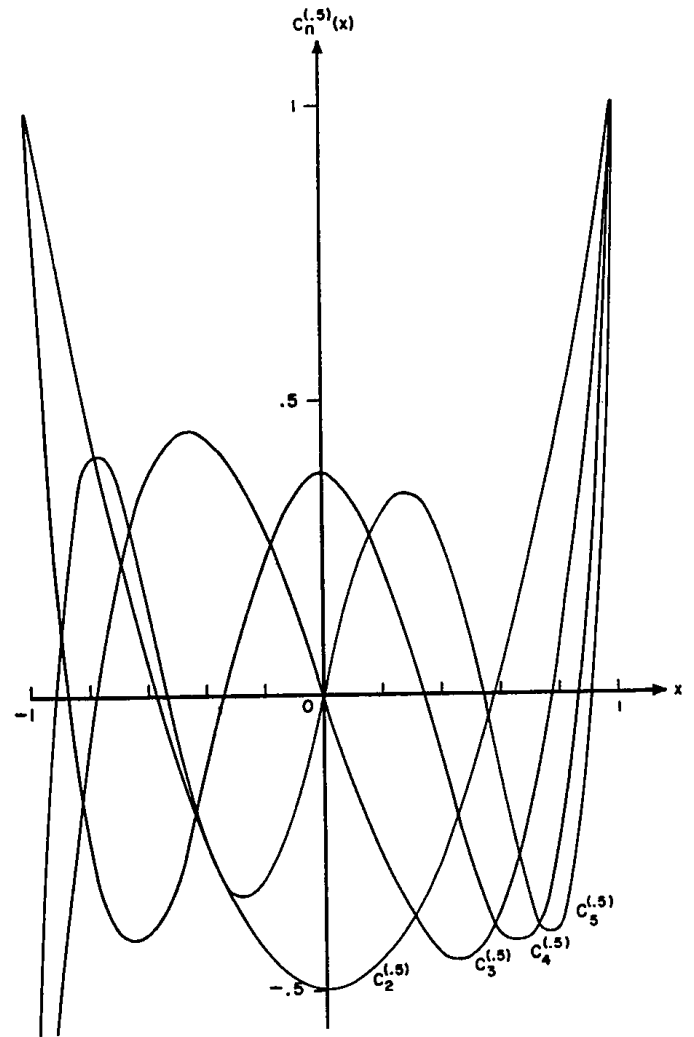


FIGURE 22.4. *Gegenbauer (Ultraspherical) Polynomials* $C_n^{(\alpha)}(x)$, $\alpha=.5$, $n=2(1)5$.