

Interpolation

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Primary Topics

- Interpolating polynomials of arbitrary degree
 - ▷ Monomial basis
 - ▷ Lagrange basis
 - ▷ Newton basis
- Piecewise polynomial interpolation
 - ▷ Linear
 - ▷ Hermite polynomials
 - ▷ Cubic splines
- MATLAB's built-in interpolation routines

Figure 10.2

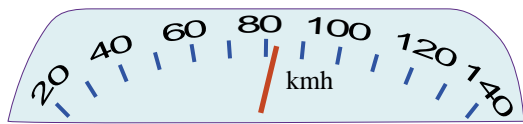


Figure 10.3

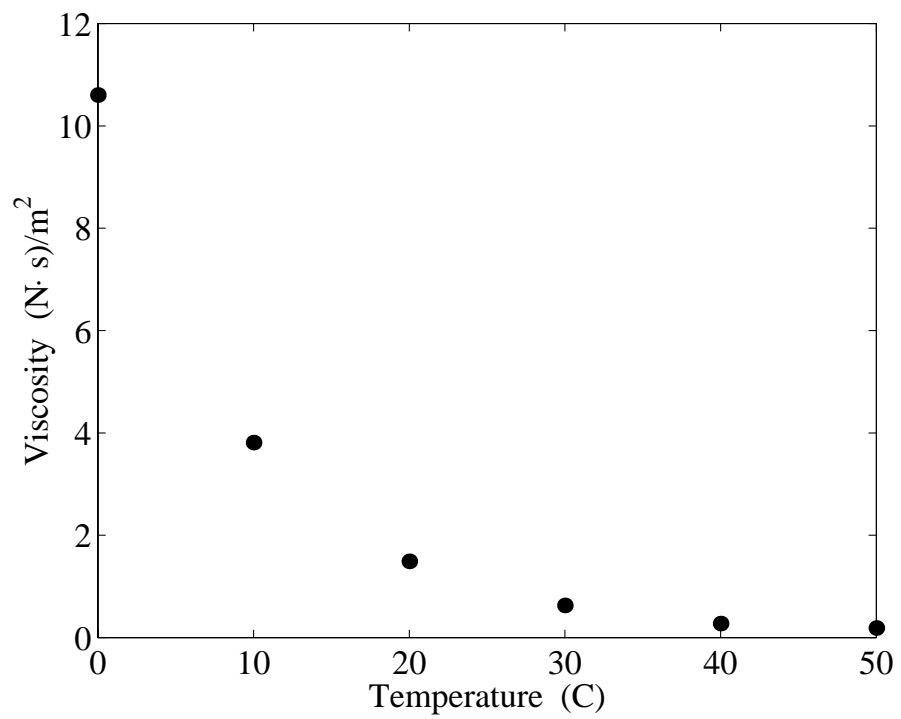


Figure 10.4

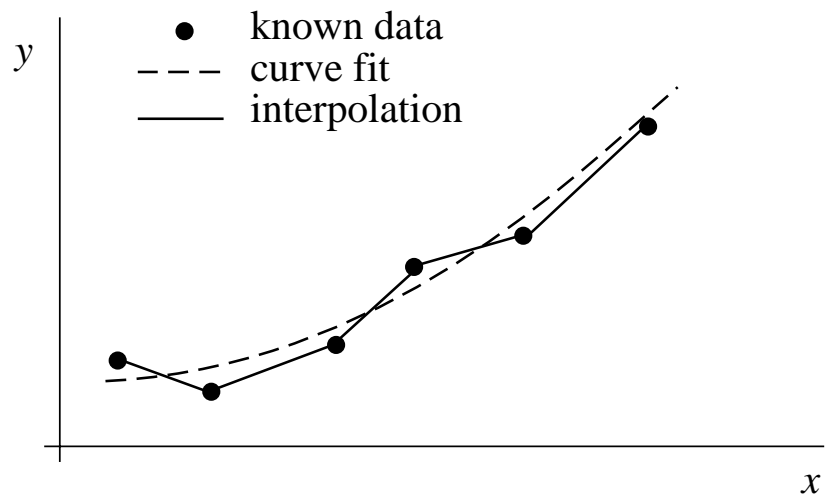


Figure 10.5

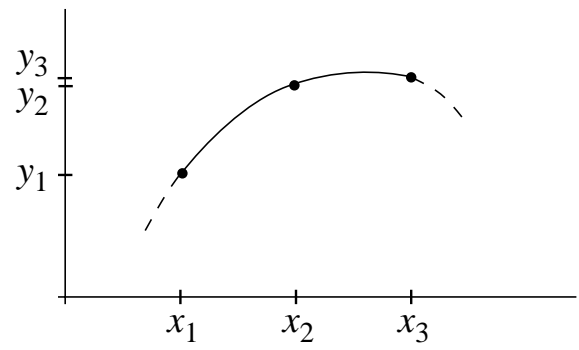
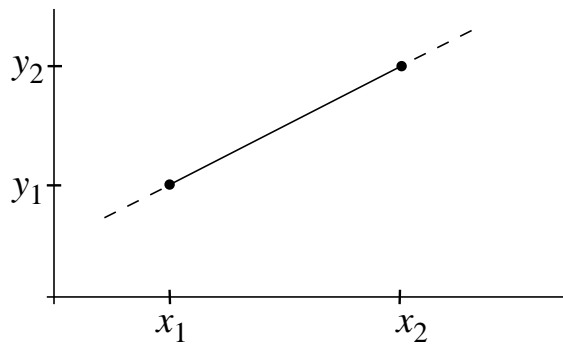


Figure 10.6

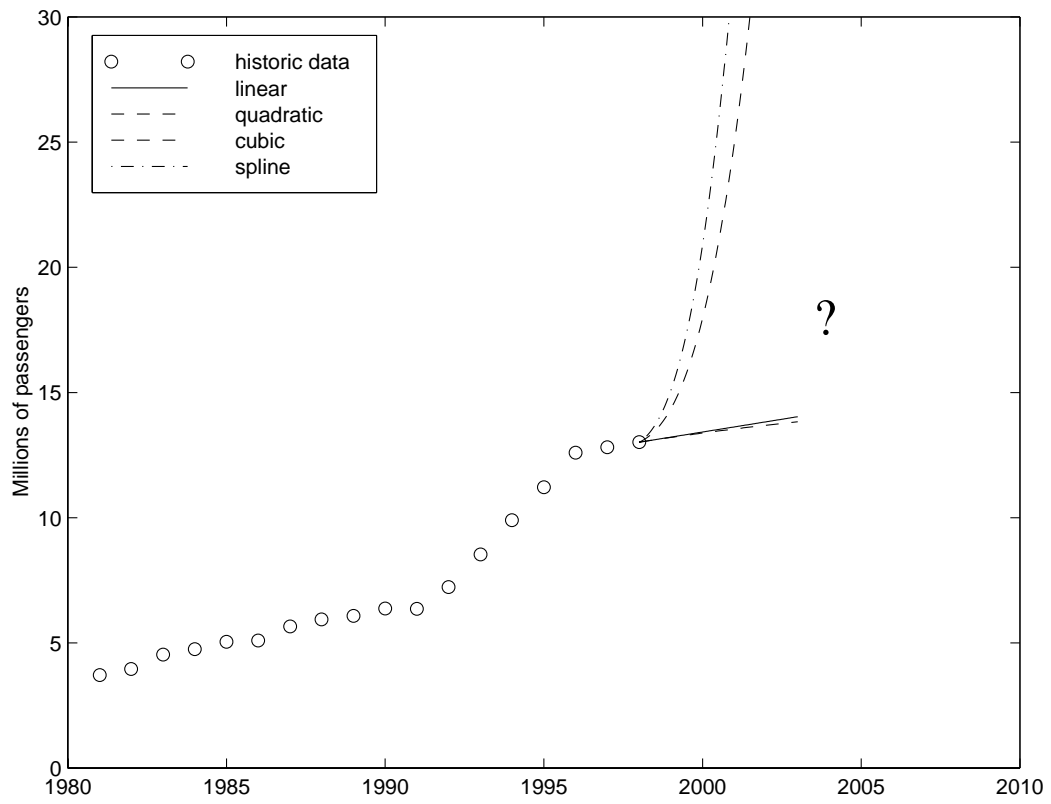


Figure 10.7

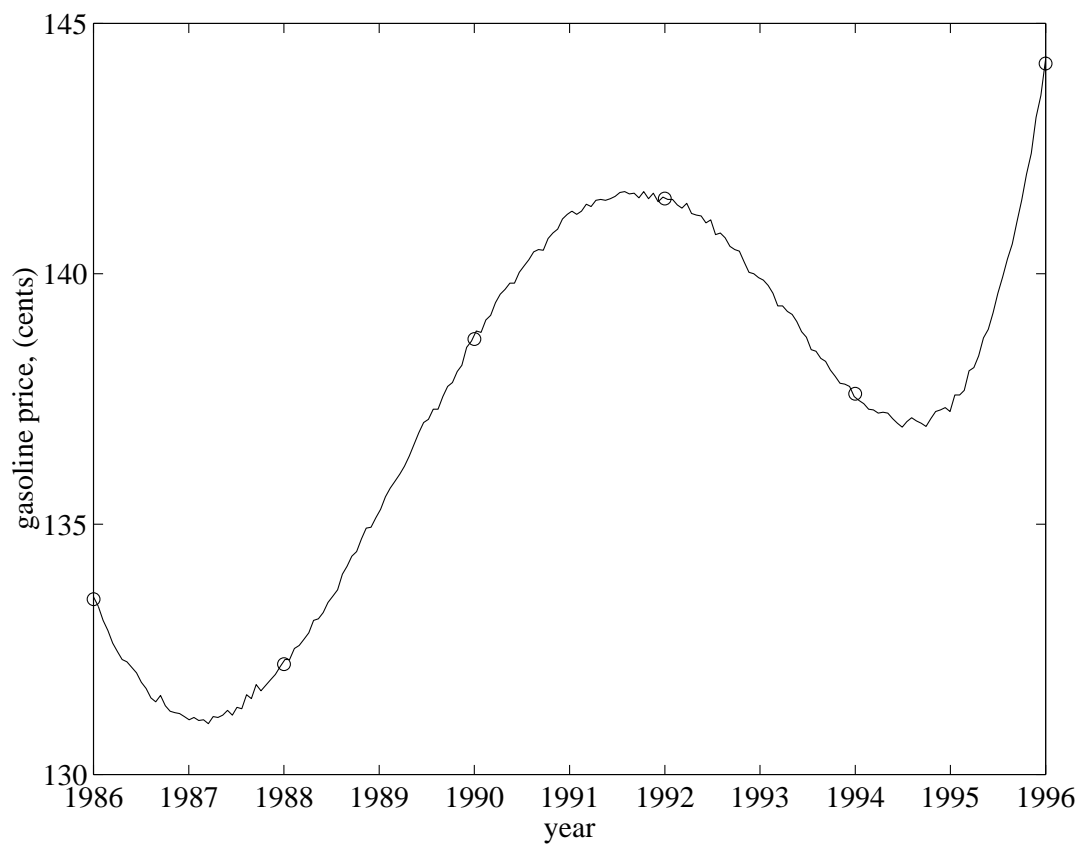


Figure 10.8

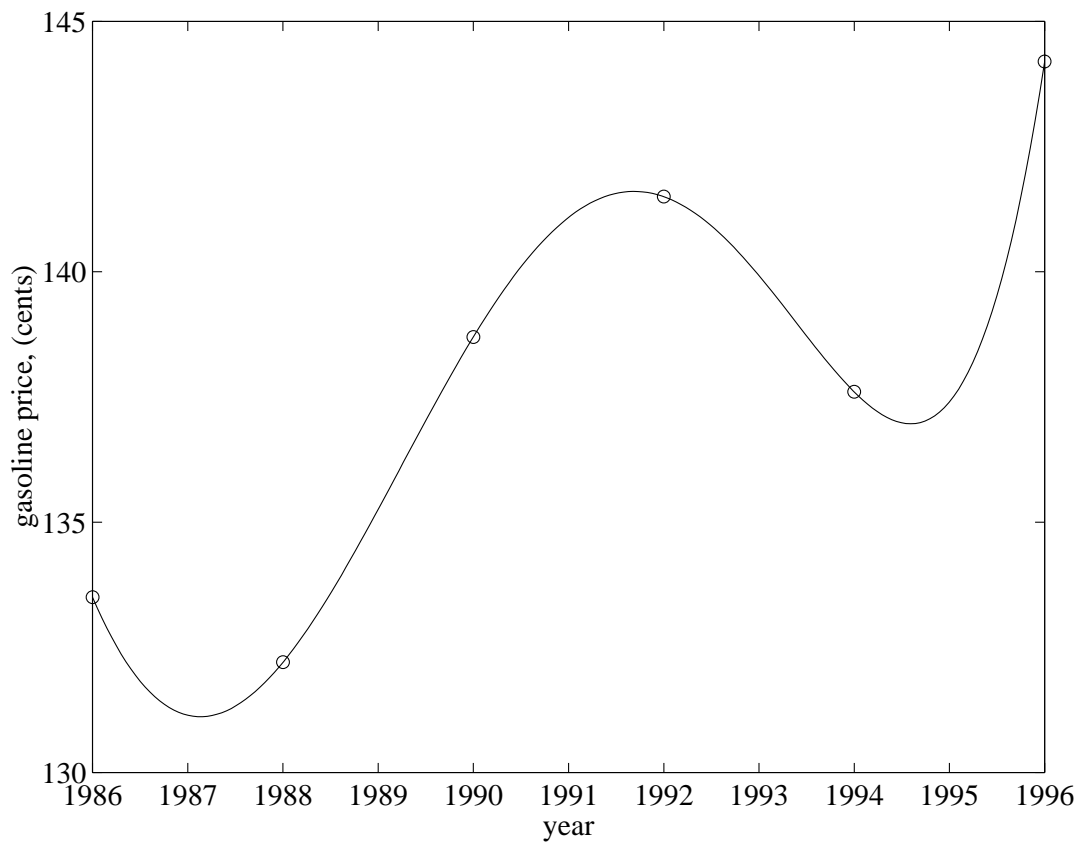


Figure 10.9

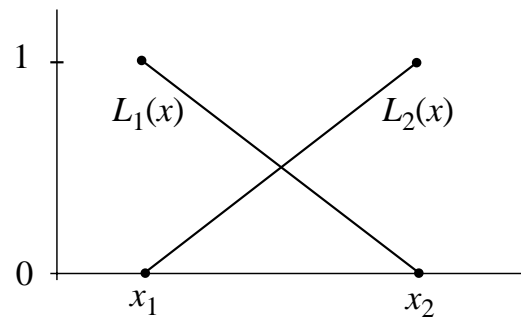
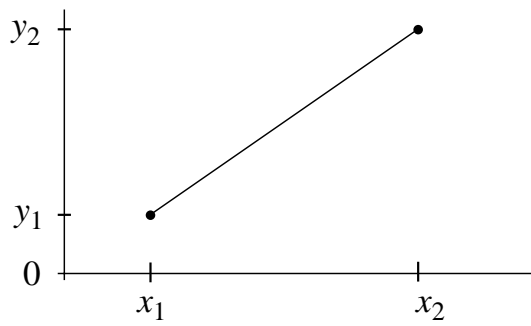


Figure 10.10

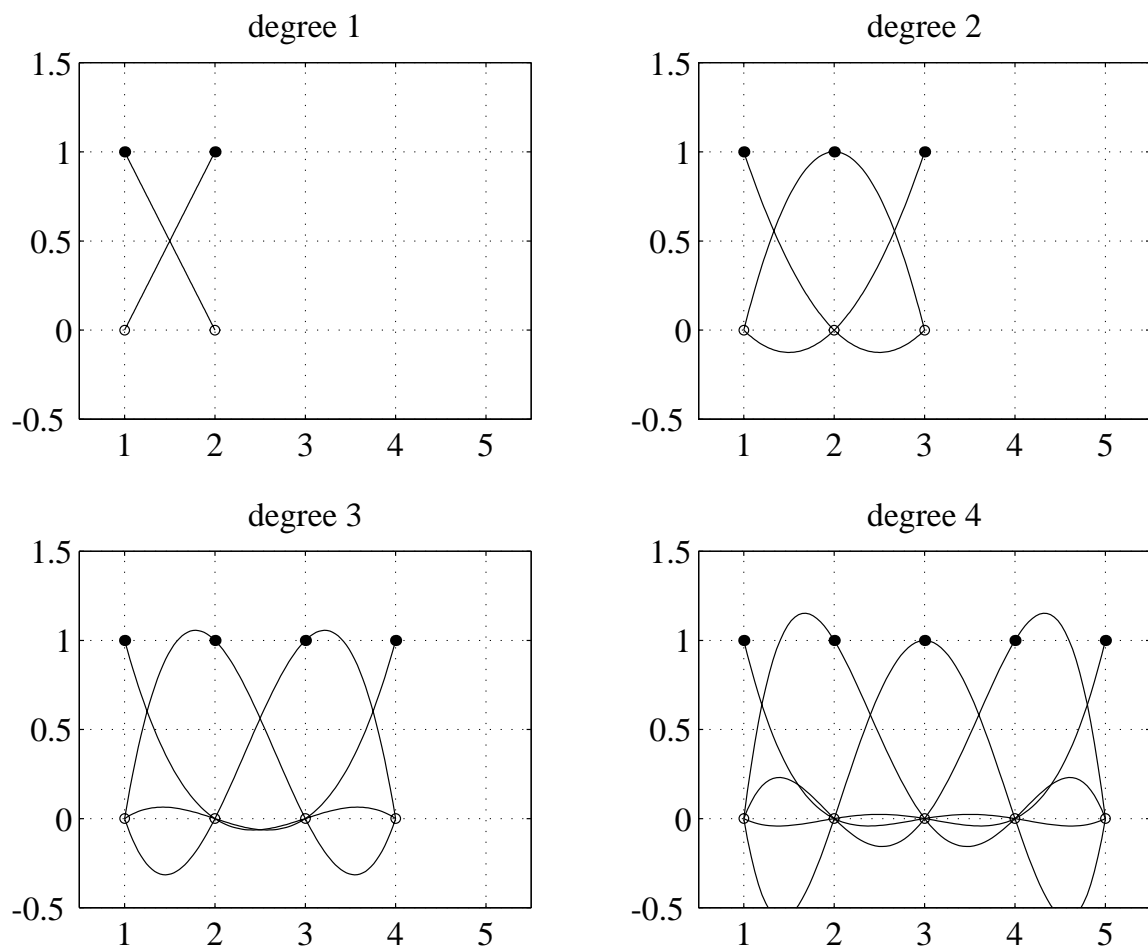


Table 10.1

x_i	$f[]$	$f[,]$	$f[, ,]$	$f[, , ,]$
x_1	$f[x_1]$			
x_2	$f[x_2]$	$f[x_1, x_2]$		
x_3	$f[x_3]$	$f[x_2, x_3]$	$f[x_1, x_2, x_3]$	
x_4	$f[x_4]$	$f[x_3, x_4]$	$f[x_2, x_3, x_4]$	$f[x_1, x_2, x_3, x_4]$

Diagonals of Divided-Difference Table

x_i	$f[]$	$f[,]$	$f[, ,]$	$f[, , ,]$
x_1	c_1			
x_2	c_2	c_2		
x_3	c_3	c_3	c_3	
x_4	c_4	c_4	c_4	c_4

Figure 10.11

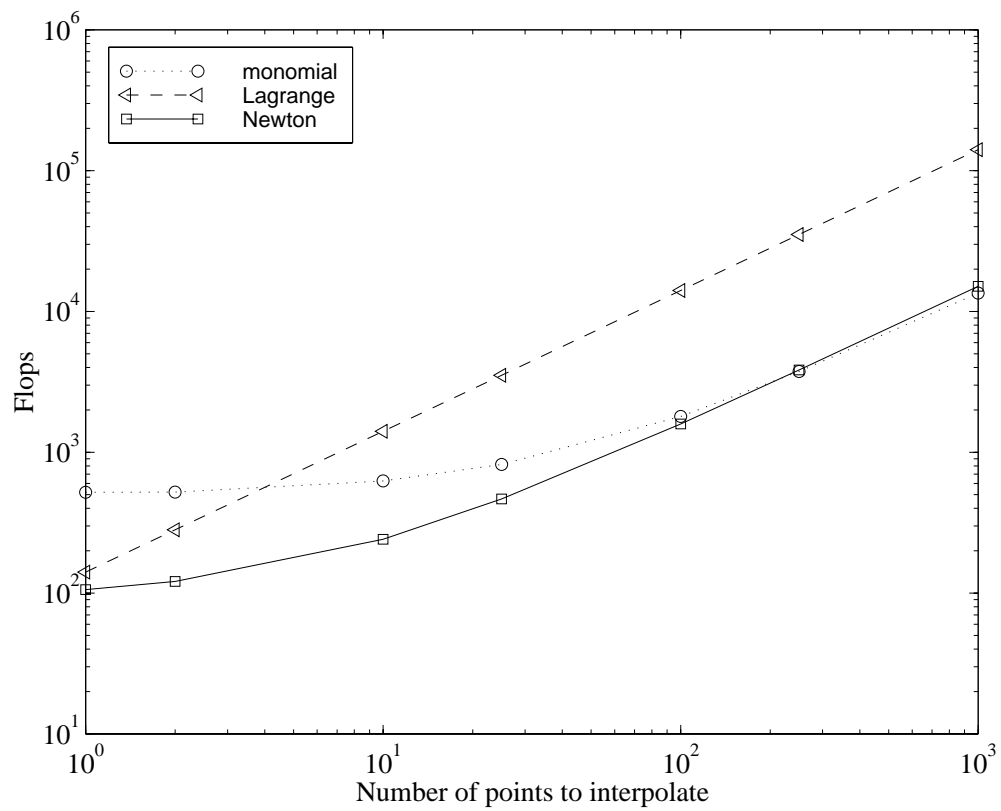


Figure 10.12

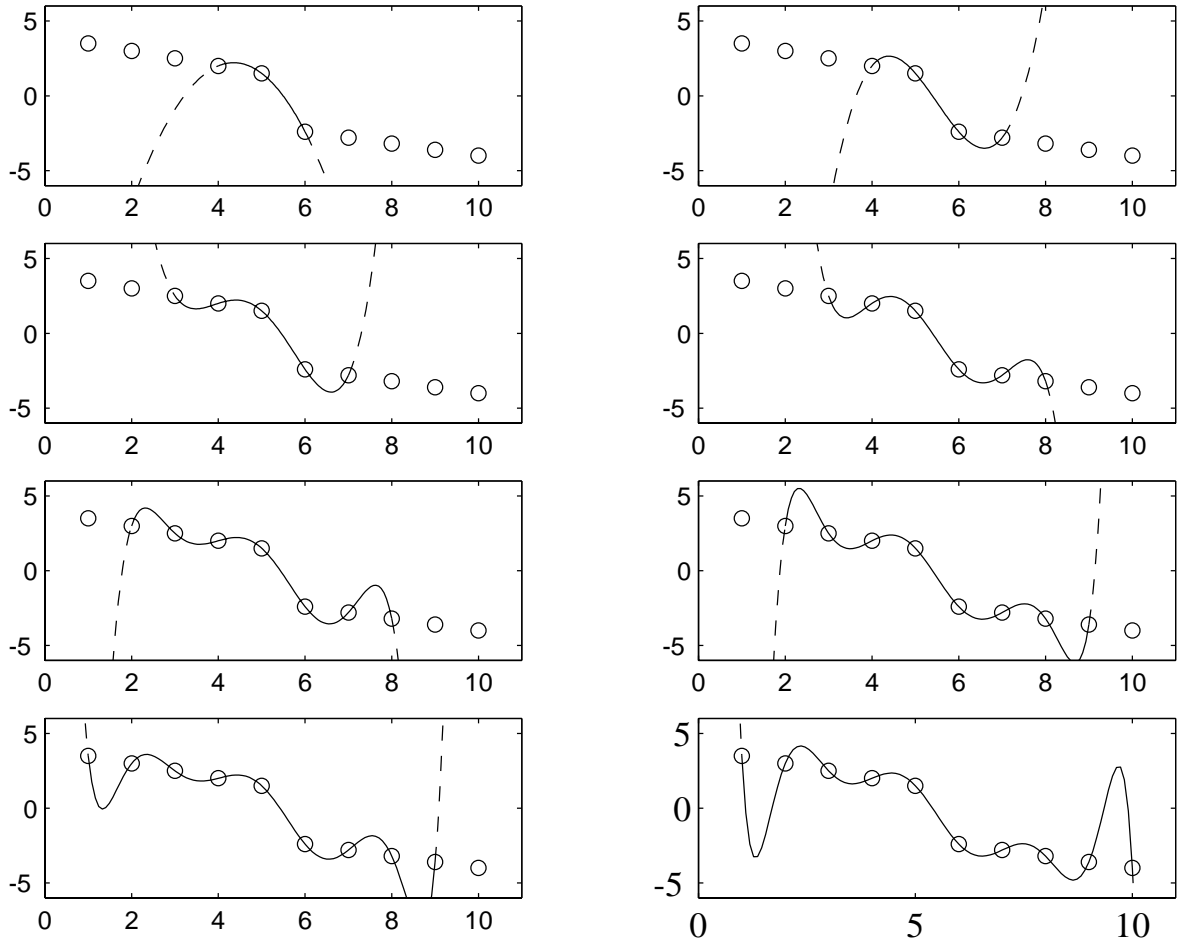


Figure 10.13

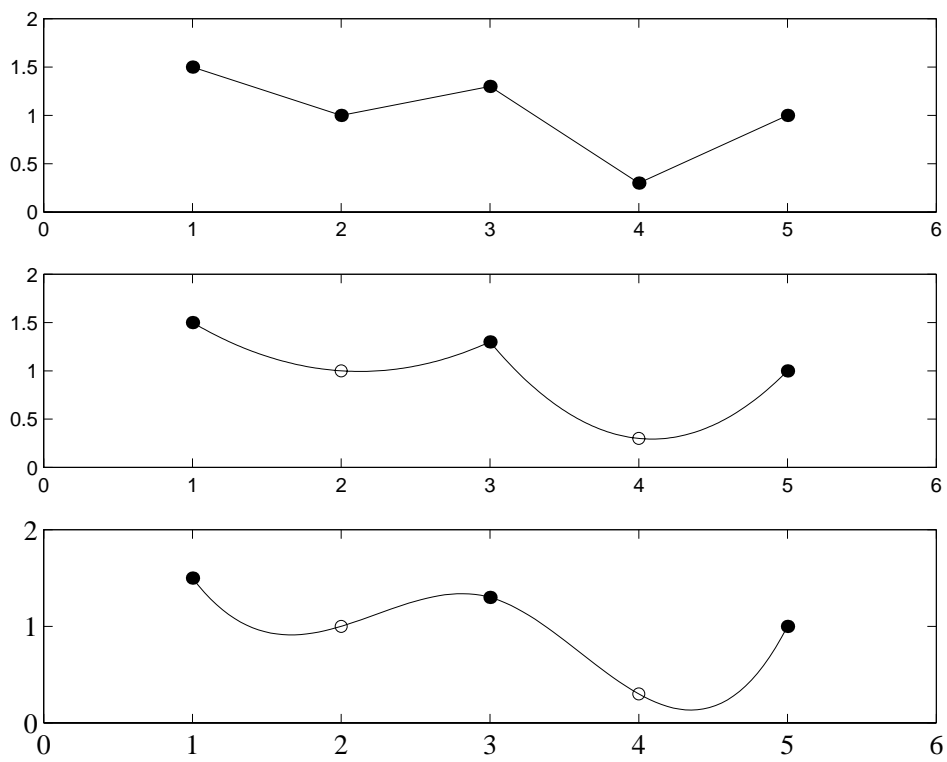


Figure 10.14

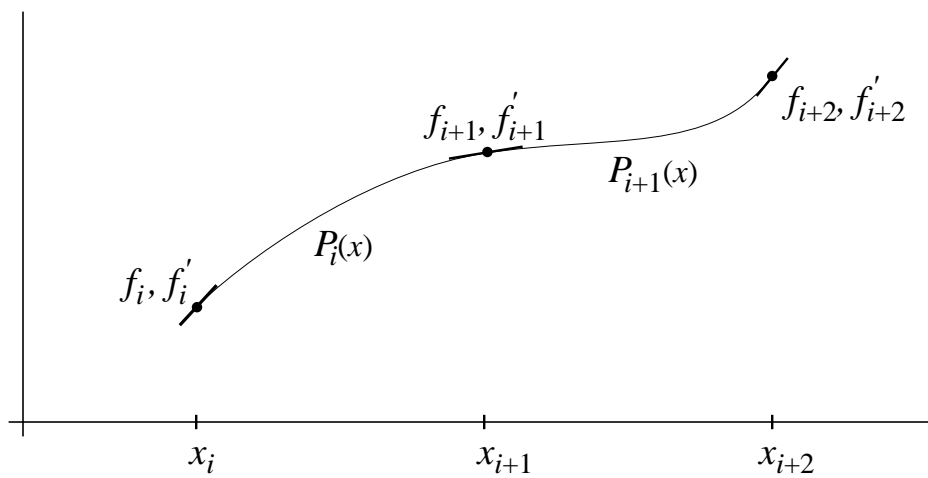


Figure 10.15

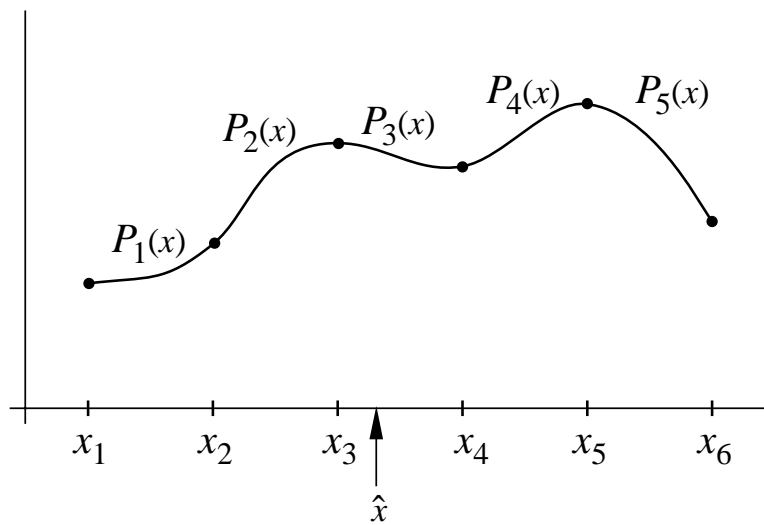


Figure 10.16

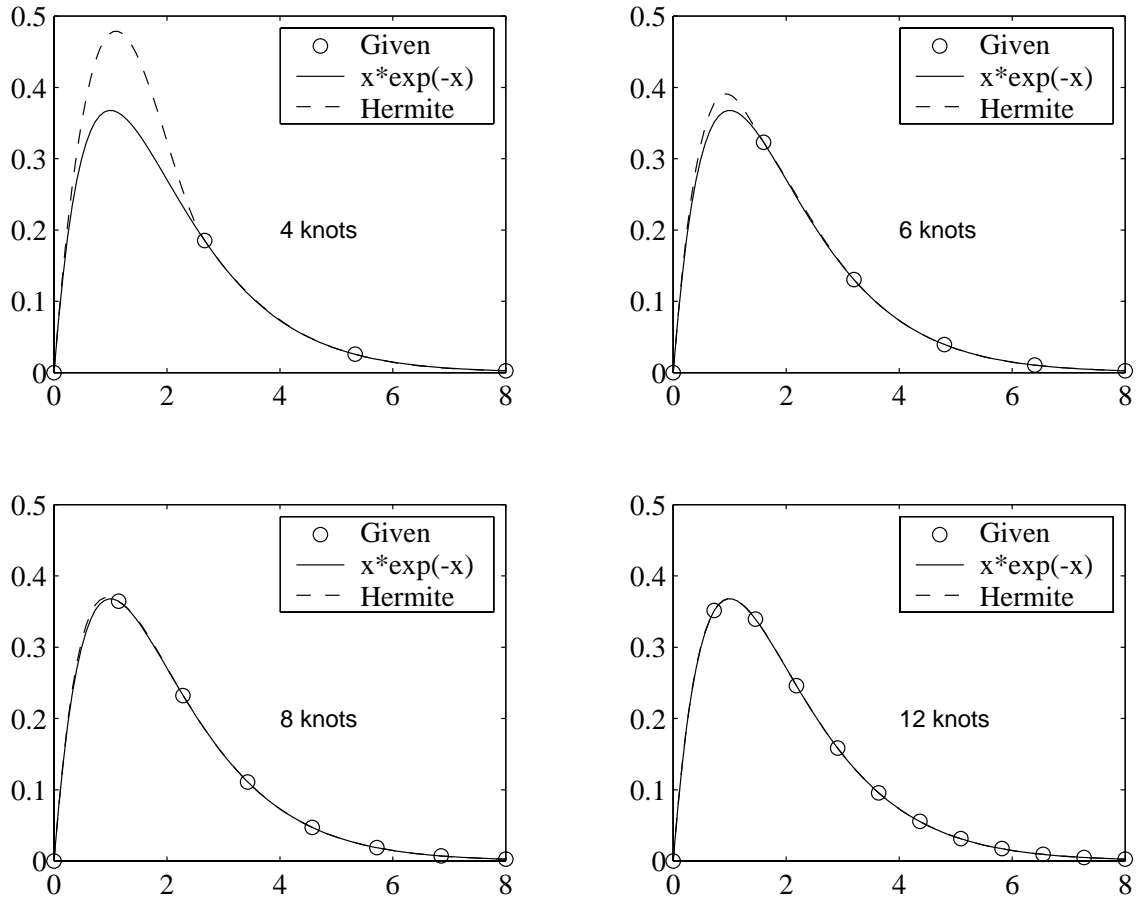


Figure 10.17

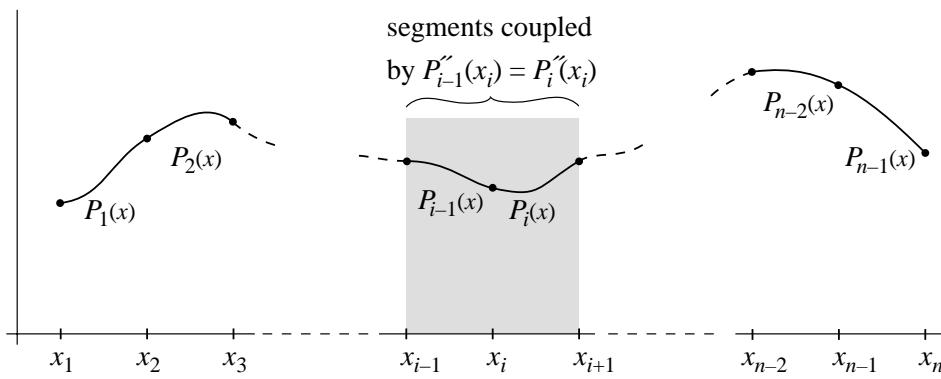


Figure 10.18

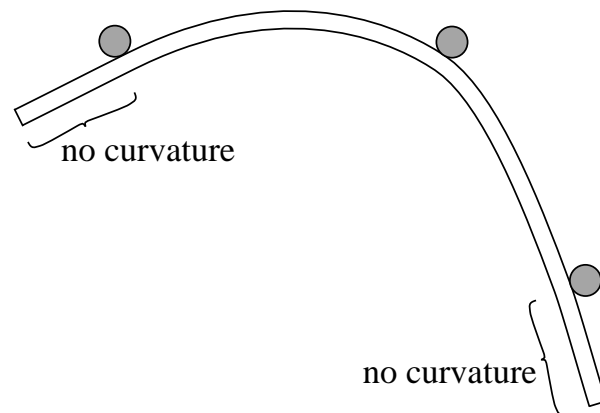


Figure 10.19

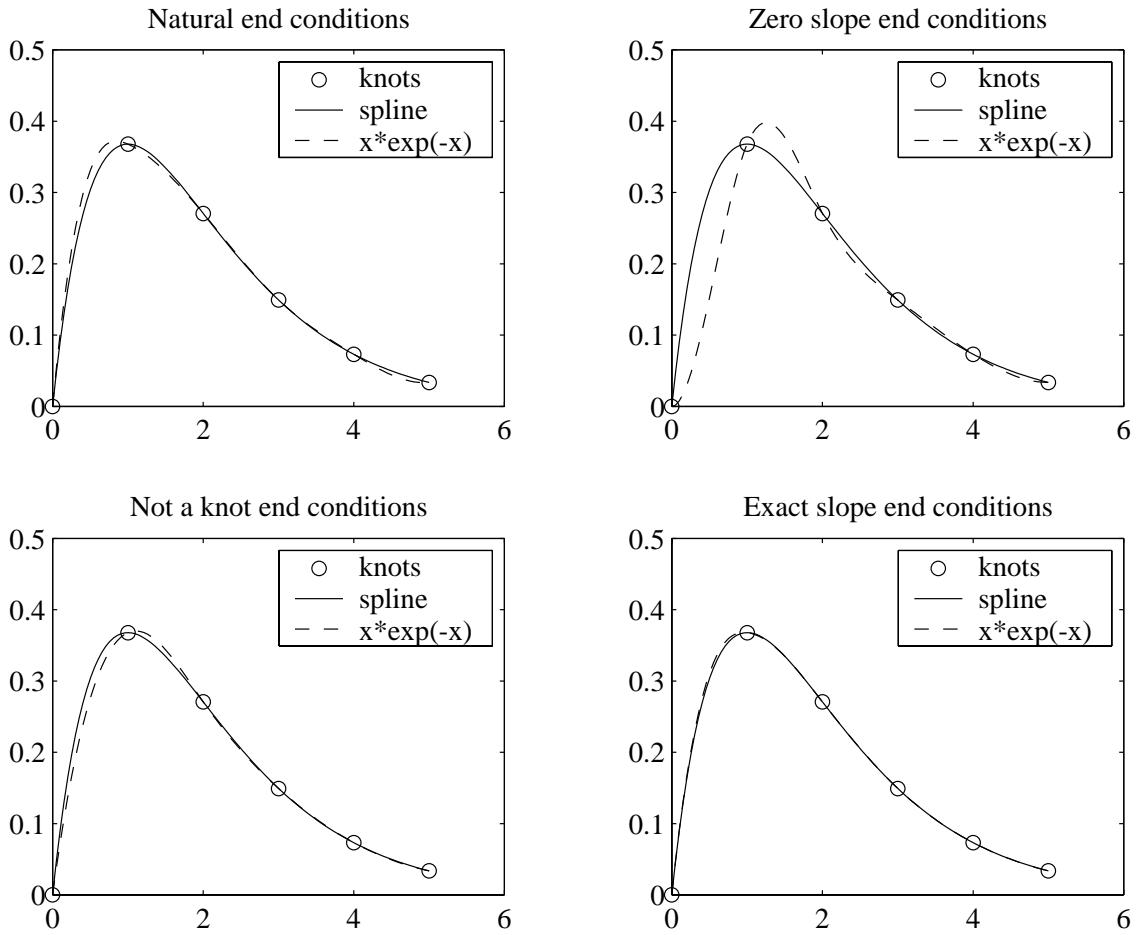
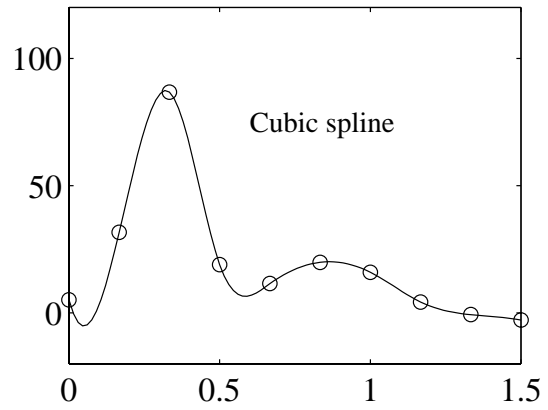
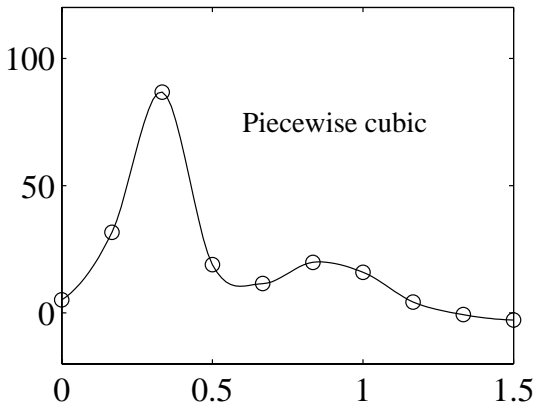
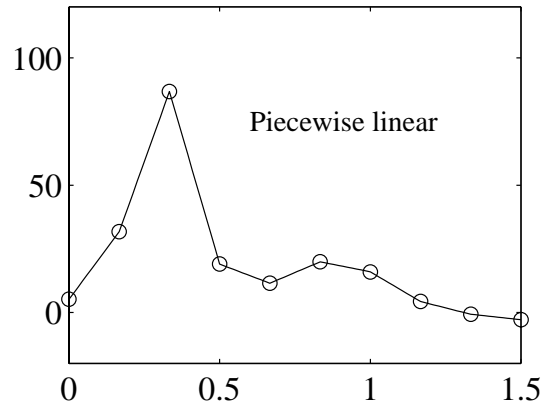
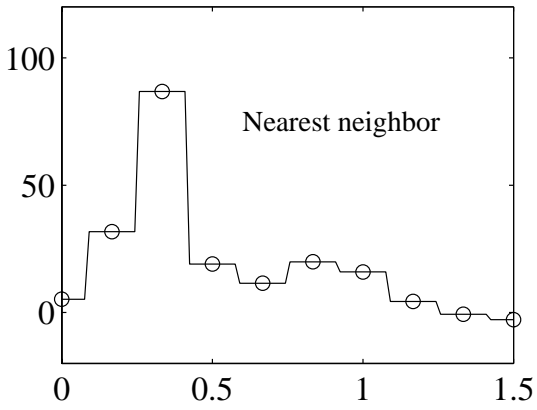
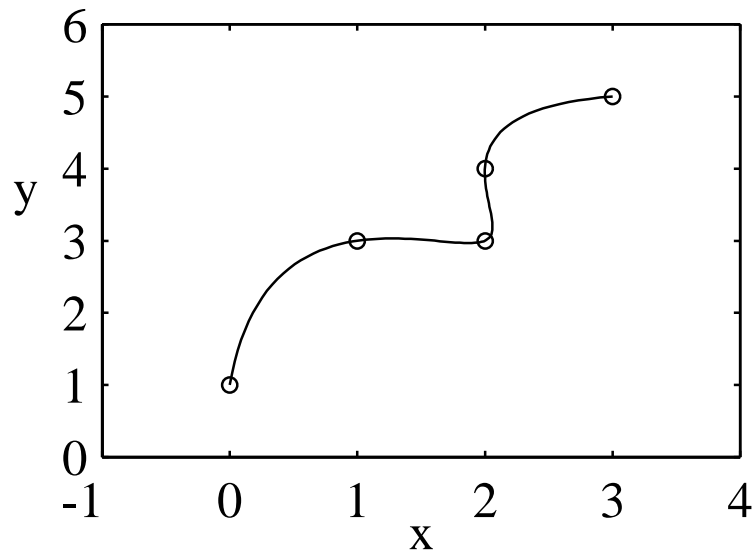


Figure 10.20



Exercise 10.20



Exercise 10.37

