Solution R-4.13

$\Theta(1)$	2^{10}			
$\Theta(n)$	$2^{\log n} = n$	$4n$	$3n + 100 \log n$	
$\Theta(n \log n)$	$n \log n$	$4 n \log n + 2n$		
$\Theta(n^2)$	$n^2 + 10 n$			
$\Theta(n^3)$	n^3			
$\Theta(2^n)$	2^n			

Solution R-4.16
The Ex1 method runs in $O(n)$ time.
Solution R-4.17
The Ex2 method runs in $O(n)$ time.
Solution R-4.18
The Ex3 method runs in $O(n^2)$ time.
Solution R-4.19
The Ex4 method runs in $O(n)$ time.
Solution R-4.20
The Ex5 method runs in $O(n^3)$ time.

Solution R-4.22

	1 sec	1 hour	1 month (30 days)	1 century
log n	$\approx 10^{300000}$	$\approx 10^{1000000000}$	$\approx 10^{0.8\times10^{12}}$	$\approx 10^{10^{15}}$
n	10^6	3.6×10^9	$\approx 2.6\times10^{12}$	$\approx 3.12\times10^{15}$
nlog n	$\approx 10^5$	$\approx 10^9$	$\approx 10^{11}$	$\approx 10^{14}$
n^2	1000	6×10^4	$\approx 1.6\times10^6$	$\approx 5.6\times10^7$
n^3	100	≈ 1500	≈ 14000	≈ 1500000
2^n	19	**31**	41	51

Solution C-4.9

$$\sum_{i=1}^{n} i^2 \le \sum_{i=1}^{n} n^2 = n \times n^2 = n^3 = O(n^3)$$