

Section 3.3

Ex.2 Statement  $t := t + i + j$  is repeated  $n^2$  times  
so the number of operations is  $O(n^2)$

Ex.4 When  $i$  become double  $i$  after each loop, so when after  $k$  times looping  $2^k > n$ , the loop will stop. So the number of operation is  $O(\log n)$

Ex.44. The best order is A(BC)  
because it uses fewer steps  
which is only 126 ( $9 \times 4 \times 2 + 3 \times 9 \times 2$ )

$$\begin{array}{l} 3 \times 4 \times 12 \times 9 \\ 3 \times 4 \times 2 \times 12 \times 9 \times 13 \times 2 \\ 9 \times 4 \times 2 \times 8 \times 9 \\ 9 \times 3 \times 9 \times 2 \times 6 \times 9 \\ 9 \times 14 \\ 126 \end{array}$$

Section 4.1

Ex.22.

a)  $a = -111, m = 99$  so:  $a \div m = -2$   
 $a \bmod m = 87$

b)  $a = -9999, m = 101$  so:  $a \div m = -99$   
 $a \bmod m = 0$

c)  $a = 10299, m = 999$  so:  $a \div m = 10$   
 $a \bmod m = 300$

d)  $a = 123456, m = 1001$  so:  $a \div m = 123$   
 $a \bmod m = 333$

Ex.24

a)  $a \equiv -15 \pmod{27}$  and  $-26 \leq a \leq 0 \Rightarrow a =$

b)  $a \equiv 24 \pmod{31}$  and  $-15 \leq a \leq 15 \Rightarrow$

c)  $a \equiv 99 \pmod{41}$  and  $100 \leq a \leq 140 \Rightarrow$

Ex.24

a)  $a \equiv 43 \pmod{23}$  and  $-22 \leq a \leq 0 \Rightarrow a = -3$

b)  $a \equiv 17 \pmod{29}$  and  $-14 \leq a \leq 14 \Rightarrow a = -12$

c)  $a \equiv -11 \pmod{21}$  and  $90 \leq a \leq 110 \Rightarrow a = 94$