Quadratic Patterns

1. For each quadratic sequence, find:
   (a) The start term
   (b) the second difference
   (c) the next three terms
      i. $13, 15, 23, 37, ...$
      ii. $6, 11, 25, 48, ...$
      iii. $16, 17, 19, 22, ...$
      iv. $12, 14, 17, 21, ...$
      v. $15, 23, 39, 63, ...$
      vi. $8, 12, 14, 14, 12, ...$
      vii. $5, 7, 5, -1, -11, ...$
      viii. $1, -2, -2, 1, ...$

2. Find the next two terms of these quadratic sequences by finding the first and second differences:
   i. $3, 4, 6, 9, 13, ...$
   ii. $3, 6, 11, 18, 27, ...$
   iii. $2, 7, 14, 23, 34, ...$

3. Find an expression for the nth term of each of the quadratic sequences:
   i. $7, 10, 15, 22, 31, ...$
   ii. $2, 7, 14, 23, ...$
   iii. $2, 8, 18, 32, 50, ...$