Quadratic *n*th Term

Workout

1. (a) 34, 46 (b) 16, 22
   (c) 37, 50 (d) 73, 99
   (e) 20, 8 (f) 98, 129

2. (a) 1, 4, 9, 16, 25 (b) 2, 5, 10, 17, 26
   (c) 5, 8, 13, 20, 29 (d) -1, 2, 7, 14, 23
   (e) 2, 8, 18, 32, 50 (f) 5, 20, 45, 80, 125
   (g) 0.5, 2, 4.5, 8, 12.5 (h) 0.25, 1, 2.25, 4, 6.25
   (i) 13, 22, 37, 58, 85 (j) 0.6, 2.4, 5.4, 9.6, 15

3. (a) $n^2 + 3$ (b) $n^2 + 50$
   (c) $n^2 - 6$ (d) $3n^2$
   (e) $20n^2$ (f) $0.2n^2$
   (g) $2n^2 + 1$ (h) $0.5n^2 + 2$

4. (a) 2, 6, 12, 20, 30 (b) 3, 8, 15, 24, 35
   (c) 0, 2, 6, 12, 20 (d) -2, -2, 0, 4, 10
   (e) 4, 8, 14, 22, 32 (f) 4, 5, 8, 13, 20
   (g) -5, 2, 11, 22, 35 (h) 3, 10, 21, 36, 55
   (i) 8, 16, 30, 50, 76 (j) 8, 43, 98, 173, 268

5. (a) -1, -4, -9, -16, -25 (b) -2, -8, -18, -32, -50
   (c) -2, -14, -34, -62, -98 (d) 2, 2, 0, -4, -10
   (e) 49, 46, 41, 34, 25 (f) 5, 8, 9, 8, 5
   (g) -10, -20, -32, -46, -62

6. (a) 2, 6, 12, 20, 30 (b) 4, 10, 18, 28, 40
   (c) 12, 21, 32, 45, 60 (d) -1, 0, 3, 8, 15
   (e) -4, -3, 0, 5, 12 (f) 14, 6, 0, -4, -6

7. (a) $n^2 + 2n + 4$ (b) $3n^2 + 4$
   (c) $2n^2 + n + 3$ (d) $2n^2 + 4n - 3$
   (e) $2n^2 + 5n + 2$ (f) $3n^2 + 6n$
   (g) $n^2 + 2n - 9$ (h) $n^2 - 2n - 4$
   (i) $2n^2 - 3n + 8$ (j) $0.5n^2 + n + 1$
   (k) $n^2 - 1.5n$

8. (a) 124 (b) 304
   (c) 213 (d) 237
   (e) 252 (f) 360
   (g) 111 (h) 76
   (i) 178 (j) 61

(k) 85

9. (a) $-n^2 + n + 3$ (b) $-2n^2 - 2n$
   (c) $-n^2 + 2n + 5$ (d) $-n^2 - n + 102$
   (e) $-3n^2 - 4n - 10$ (f) $-0.25n^2 + 0.25n + 6$

10. (a) -87 (b) -220
    (c) -75 (d) -8
    (e) -350 (f) -16.5

11. $n = 8$

12. $n = 7$

13. $n = 8$

Apply

1. 330

2. (a) $n^2 + 4$ (b) $2n^2$
   (c) $n^2 + n$ (d) $n^2 + 3n + 2$

3. 1141

4. The 13th term (-50)

5. 140, 165

6. $n^2 - 8n + 21 = (n - 4)^2 + 5$

   Since $(n - 4)^2 \geq 0$

   $(n - 4)^2 + 5 \geq 5$

   Therefore all terms are positive