Generating Quadratic Sequences

By finding the first and second differences, decide whether each of these sequences is quadratic.

(a) 1, 5, 11, 19, 29, 41

(b) 2, 5, 8, 11, 14, 17

(c) 0, 8, 22, 41, 68, 98

(d) 2, 9, 20, 35, 54, 77

(e) 4, 1, 0, 1, 4, 9

(f) 6, 17, 36, 65, 98, 141

(g) 18, 37, 62, 93, 130, 173

(h) 3, 9, 23, 43, 75, 113

(i) −10, −4, 12, 38, 74, 120

(j) 17, 39, 69, 107, 153, 207

(a) Yes
(b) No
(c) No
(d) Yes
(e) Yes
(f) No
(g) Yes
(h) No
(i) Yes
(j) Yes

Generate the first five terms of each of these quadratic sequences.

(a) $n^2 + 10$ (b) $n^2 - 1$

(c) $n^2 + n$ (d) $n^2 + 2n + 1$

(e) $n^2 - 3n$ (f) $n^2 - n - 2$

(g) $2n^2 + 5$ (h) $3n^2 - 7$

(i) $2n^2 + n - 5$ (j) $4n^2 + 3n - 1$

(a) 11, 14, 19, 26, 35
(b) 0, 3, 8, 15, 24
(c) 2, 6, 12, 20, 30
(d) 4, 9, 16, 25, 36
(e) -2, -2, 0, 4, 10
(f) -2, 0, 4, 10, 18
(g) 7, 13, 23, 37, 55
(h) -4, 5, 20, 41, 68
(i) -2, 5, 16, 31, 50
(j) 6, 21, 44, 75, 114

Find the 10th and 50th term of the following quadratic sequences.

(a) $n^2 + 5$ (b) $n^2 - 2$

(c) $n^2 - n$ (d) $n^2 + 2n$

(e) $n^2 - 3n + 1$ (f) $n^2 - n - 2$

(g) $4n^2 + 1$ (h) $3n^2$

(i) $2n^2 + n - 1$ (j) $5n^2 + 3n$

(a) 105, 2505 (b) 98, 2498
(c) 90, 2450 (d) 120, 2600
(e) 71, 2351 (f) 88, 2448
(g) 401, 10001 (h) 300, 7500
(i) 209, 5049 (j) 530, 12650