Single Pure – Polynomial Sequences

Find an expression for the nth term of the following polynomial sequences. First you will need to determine what power polynomial is at work and then go to work.

1. $7, 10, 13, 16, 19, 22, 25, 28, 31, 34, 37, 40, 43, \ldots$

$\boxed{3n + 4}$

2. $-1, 13, 35, 65, 103, 149, 203, 265, 335, 413, 499, 593, 695, \ldots$

$\boxed{4n^2 + 2n - 7}$

3. $2, -5, -16, -31, -50, -73, -100, -131, -166, -205, -248, \ldots$

$\boxed{5 - n - 2n^2}$

4. $3, 15, 43, 93, 171, 283, 435, 633, 883, 1191, 1563, 2005, 2523, \ldots$

$\boxed{n^3 + 2n^2 - n + 1}$

5. $1, 4, 31, 130, 373, 856, 1699, 3046, 5065, 7948, 11911, 17194, 24061, \ldots$

$\boxed{n^4 - 2n^3 - n^2 + 5n - 2}$

6. $0, 8, 44, 126, 272, 500, 828, 1274, 1856, 2592, 3500, 4598, \ldots$

$\boxed{3n^3 - 4n^2 - n + 2}$

7. $-4, 48, 454, 1994, 6168, 15436, 33458, 65334, 117844, 199688, \ldots$

$\boxed{2n^5 - 3n^2 - n - 2}$