Generic form for a probably infinite sequence of Poulet numbers ie 4n^2+37n+85

Marius Coman
email: mariuscoman13@gmail.com

Abstract. In this paper I observe that the formula 4*n^2 + 37*n + 85 produces Poulet numbers, and I conjecture that this formula is generic for an infinite sequence of Poulet numbers.

The sequence of Poulet numbers of the form 4*n^2 + 37*n + 85:

: 1105, 1387, 2047, 3277, 6601, 13747, 16705, 19951, 31417, 74665, 83665, 88357, 90751 (...)

These numbers were obtained for the following values of n:

: 12, 14, 18, 24, 36, 54, 60, 66, 88, 132, 140, 144, 146 (...)

Conjecture:

There are infinite many Poulet numbers of the form 4*n^2 + 37*n + 85 (see A214017 posted by me on OEIS for a subsequence of the sequence from above, i.e. Poulet numbers of the form 144*n^2 + 122*n + 85).

Observation:

Note that almost all from the first 13 numbers P from the sequence above have a prime factor q of one from the following five forms:

(A) q = 17 (for P = 1105 = 5*13*17);
(B) q is of the form 17*m + m + 1 (q = 73 = 4*17 + 5 for P = 1387, q = 109 = 6*17 + 7 for P = 74665);
(C) q is of the form 17*m + m - 1 (q = 89 = 5*17 + 4 for P = 2047 and P = 31417; q = 233 = 13*17 + 12 for P = 13747, q = 71 = 4*17 + 3 for P = 19951);
(D) q is of the form 17*m - m + 1 (q = 113 = 7*17 - 6 for P = 3277; q = 257 = 16*17 – 15 for P = 13747; q = 353 = 22*17 – 21 for P = 31417, q = 577 = 36*17 – 35 for P = 83665, q = 593 = 37*17 – 36 for P = 88357);
(E) q is of the form 17*m – m – 1.

Exceptions:

:   6601 = 7*23*41; but, even in this case, 7*23 = 161 = 9*17 + 8 (case C), 7*41 = 16*17 + 15 (case C), 23*41 = 59*17 - 60 (case E);

:   90751 = 151*601; but, even in this case, 151*601 = 5672*17 - 5673 (case E).