Conjecture on 3-Carmichael numbers of the form (4h+3)(4j+1)(4k+3)

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Abstract. In this paper I conjecture that for any 3-Carmichael number (absolute Fermat pseudoprime with three prime factors, see the sequence A087788 in OEIS) of the form (4*h + 3)*(4*j + 1)*(4*k + 3) is true that (k – h) and j must share a common factor (sometimes (k – h) is a multiple of j). The conjecture is probably true even for the larger set of 3-Poulet numbers (Fermat pseudoprimes to base 2 with three prime factors, see the sequence 215672 in OEIS).

Conjecture:

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Note: The number of the 3-Carmichael numbers of the form (4*h + 1)*(4*j + 1)*(4*k + 1) respectively (4*h + 3)*(4*j + 1)*(4*k + 3) seems to be prevalent in front of those of the form (4*h + 1)*(4*j + 3)*(4*k + 1) or (4*h + 3)*(4*j + 3)*(4*k + 3).

Verifying the conjecture:
(for ten consecutive 3-Carmichael numbers of this form)

: 7145178241130641 = 61987*123973*929791 = (4*15496 + 3)*(4*30993 + 1)*(4*232447 + 3) and 232447 – 15496 = 7*30993;

: 7161631253773501 = 46771*654781*233851 = (4*11692 + 3)*(4*163695 + 1)*(4*58462 + 3) and 58462 – 11692 share with 163695 the factor 54565;

: 7162573122326497 = 64499*36857*3012979 = (4*16124 + 3)*(4*9214 + 1)*(4*753244 + 3) and 753244 – 16124 = 80*9214;

: 7181488986943501 = 29851*1611901*149251 = (4*7462 + 3)*(4*402975 + 1)*(4*37312 + 3) and 37312 - 7462 share with 402975 the factor 14925;

: 7190899230439261 = 62119*372709*310591 = (4*15529 + 3)*(4*93177 + 1)*(4*77647 + 3) and 77647 - 15529 share with 93177 the factor 31059;

: 7192327464624121 = 52711*456821*298691 = (4*13177 + 3)*(4*114205 + 1)*(4*74672 + 3) and 74672 - 13177 share with 114205 the factor 8785;

: 7199906330209321 = 19927*2590381*139483 = (4*4981 + 3)*(4*647595 + 1)*(4*34870 + 3) and 34870 - 4981 share with 647595 the factor 9963;

: 7202106745726369 = 27779*444449*583339 = (4*6944 + 3)*(4*111112 + 1)*(4*145834 + 3) and 145834 - 6944 share with 111112 the factor 27778;

: 7206522548168833 = 9187*146977*5337067 = (4*2296 + 3)*(4*36744 + 1)*(4*1334266 + 3) and 1334266 - 2296 share with 36744 the factor 9186;

: 7206889748909401 = 34211*136841*1539451 = (4*8552 + 3)*(4*34210 + 1)*(4*384862 + 3) and 384862 - 8552 = 11*34210.