Primes of the form 2^a·2^b·2^c + d where a, b, c, d of the form 6k-1

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Abstract. In this paper I make the following conjecture: For any a, b, c distinct numbers of the form 6*k – 1 there exist an infinity of numbers d of the form 6*h – 1 such that the number n = 2^a*2^b*2^c + d is prime. This is a formula that conducts often to primes and composites with very few prime factors; for instance, taking a = 5 and b = 11 are obtained seventeen primes for c and d both less than 100 (for c = 17, n is prime for six values of d up to 100: 17, 29, 35, 59, 71, 77)! Also note that for [a, b, c, d] = [59, 65, 71, 53] (all four less than or equal to 71) is obtained a prime with 59 digits!

Conjecture:

For any a, b, c distinct numbers of the form 6*k – 1 there exist an infinity of numbers d of the form 6*h – 1 such that the number n = 2^a*2^b*2^c + d is prime.

The first six primes n for [a, b, c] = [5, 11, 17]:

: n = 2^5*2^11*2^17 + 17 = 8589934609;
: n = 2^5*2^11*2^17 + 29 = 8589934621;
: n = 2^5*2^11*2^17 + 35 = 8589934627;
: n = 2^5*2^11*2^17 + 59 = 8589934651;
: n = 2^5*2^11*2^17 + 17 = 8589934663;
: n = 2^5*2^11*2^17 + 17 = 8589934669.

The less primes n for [a, b]=[5, 11] and c from 17 to 71:

: n = 2^5*2^11*2^17 + 17 = 8589934609;
: n = 2^5*2^11*2^23 + 23 = 549755813911;
: n = 2^5*2^11*2^29 + 59 = 35184372088891;
: n = 2^5*2^11*2^35 + 65 = 2251799813685313;
: n = 2^5*2^11*2^41 + 35 = 144115188075855907;
: n = 2^5*2^11*2^47 + 29 = 9223372036854775837;
: n = 2^5*2^11*2^53 + 29 = 590295810358705651741;
: n = 2^5*2^11*2^59 + 53 = 37778931862957161709621;
: n = 2^5*2^11*2^65 + 17 = 2417851639229258349412369;
: n = 2^5*2^11*2^71 + 71 = 154742504910672534362390599.

The largest two primes n for a, b, c, d less than or equal to 71:

: n = 2^59*2^65*2^71 + 35 = 50216813883093446110686315385661331328818843555712276103203;
: n = 2^59*2^65*2^71 + 53 = 50216813883093446110686315385661331328818843555712276103221.