Conjecture that states that numbers $4n^2 + 8n + 3$ are Fermat pseudoprimes to base $2n+2$

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Abstract. In this paper I conjecture that any number of the form $4n^2 + 8n + 3$, where $n$ is positive integer, is Fermat pseudoprime to base $2n + 2$.

Conjecture:

Any number of the form $a(n) = 4n^2 + 8n + 3$, where $n$ is positive integer, is Fermat pseudoprime to base $2n + 2$.

Verifying the conjecture:
(for the first fifteen values of $n$)

: $a(1) = 15$ which is indeed pseudoprime to base 4;
: $a(2) = 35$ which is indeed pseudoprime to base 6;
: $a(3) = 63$ which is indeed pseudoprime to base 8;
: $a(4) = 99$ which is indeed pseudoprime to base 10;
: $a(5) = 143$ which is indeed pseudoprime to base 12;
: $a(6) = 195$ which is indeed pseudoprime to base 14;
: $a(7) = 255$ which is indeed pseudoprime to base 16;
: $a(8) = 323$ which is indeed pseudoprime to base 18;
: $a(9) = 399$ which is indeed pseudoprime to base 20;
: $a(10) = 483$ which is indeed pseudoprime to base 22;
: $a(11) = 575$ which is indeed pseudoprime to base 24;
: $a(12) = 675$ which is indeed pseudoprime to base 26;
: $a(13) = 783$ which is indeed pseudoprime to base 28;
: $a(14) = 899$ which is indeed pseudoprime to base 30;
: $a(15) = 1023$ which is indeed pseudoprime to base 32.