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Anti-Fibonacci Numbers

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The opposite of a Fibonacci number is an anti-Fibonacci number. Fibonaccis are generated by adding pairs of previously computed numbers. Anti-Fibonaccis are computed by omitting the previously computed numbers. For example, the original anti-Fibonacci numbers are boldfaced: 1, 2, **3** = 1+2, 4, 5, 6, 7, 8, **9** = 4+5, 10, 11, 12, **13** = 6+7, …. It is perhaps not surprising that their behavior is completely different from that of the Fibonaccis. However, in an intense study session at Indira Gandhi Airport in 2016, Tao-Ming Wang and I developed a formula for the n-th anti-Fibonacci number.

But wait, there's more! What if we start with 2, 3, 4, …? 3, 4, 5, …? It gets messy.

What if we don't jump over previously used numbers, but hew closer to the Fibonacci rule by computing 1, 2, **3** = 1+2, 4, 5, **6** = 2+4, 7, 8, **9** = 4+5, …? Guess what: the next one is **12**, then **15**, and you get the picture. Boring! But now start with 2, 3, 4, **5**, 6, **7**, 8, 9, **10**, 11, 12, 13, **14**, 15, …. Can you guess the next number? Not boring.

See the Online Encyclopedia of Integer Sequences, Sequence A075326.
