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The Collatz function:

$$\text{Col}(n) = \begin{cases} 3n + 1 & \text{if } n \text{ is odd,} \\ \frac{n}{2} & \text{if } n \text{ is even.} \end{cases}$$

**Collatz Conjecture:** For any positive integer starting value, the sequence of Collatz iterates eventually reaches 1.

↳ Collatz trajectory

height: max value in the trajectory

stopping time: number of iterations required to reach 1 from  $n$ .

EXAMPLE:

$$5 \xrightarrow{1} 16 \xrightarrow{2} 8 \xrightarrow{3} 4 \xrightarrow{4} 2 \xrightarrow{5} 1$$

$$\text{stop}(5) = 5$$