MATH 242 — 19 Sept. 2025

FIBONACCI SEQUENCE

F_4 F_5 F_6 F_7 F_8 F_9 F_{10}

0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, ...

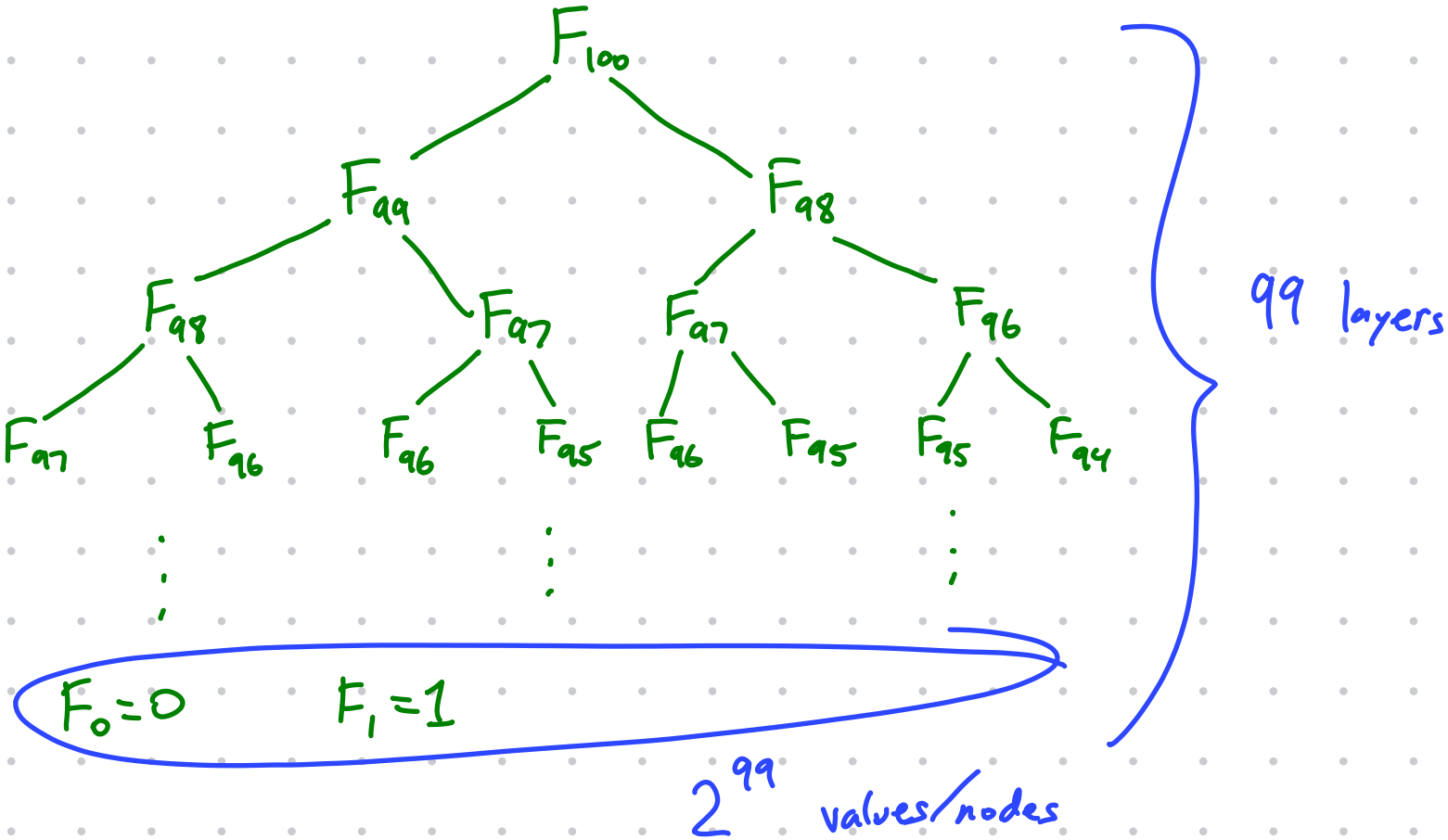
$F_0 = 0$ $F_1 = 1$ F_2 F_3

initial values

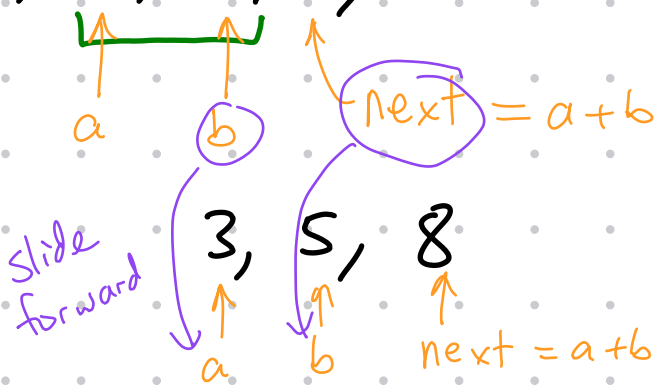
RECURRENCE RELATION

$$F_n = F_{n-1} + F_{n-2}$$

for integers $n \geq 2$



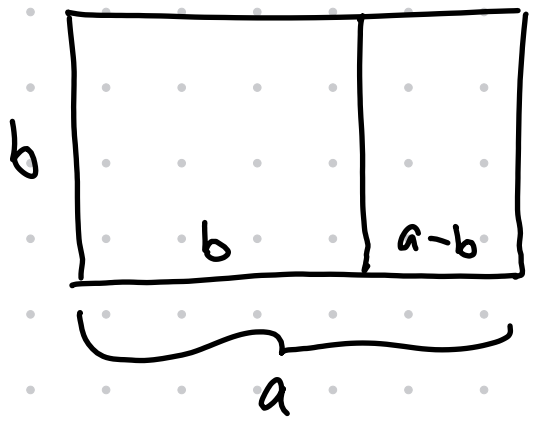
0, 1, 1, 2, 3, 5, ...



Investigate: Compute $\frac{F_n}{F_{n-1}}$ for various n.

What do you observe?

Golden Ratio:



$$\frac{a}{b} = \frac{b}{a-b} = 1.618\ldots$$