

$$a_1 = 1 = a_2$$

$$a_n = 2a_{n-1} + 3a_{n-2} \quad ; \quad n \geq 3$$

① គា  $a_5$  តាមលំនាំដើម

$a_1$	$a_2$	$a_3$	$a_4$	$a_5$
1	1	5	13	41

② ការគណនា  $a_n$  <https://brilliant.org/wiki/linear-recurrence-relations/>

ឬ characteristic polynomial.

$$a_n = 2a_{n-1} + 3a_{n-2} \rightarrow X^2 = 2X + 3$$

$$(X - 3)(X + 1) = 0 \rightarrow r_1 = -1, r_2 = 3.$$

$$a_n = C_1 (-1)^n + C_2 (3)^n$$

បើ  $n = 1$  ;  $1 = C_1 (-1) + C_2 (3)$

ឬ  $n = 2$  ;  $1 = C_1 (1) + C_2 (9)$

ឬ គណនាតាមរយៈ  $C_2 = \frac{2}{12} = \frac{1}{6}$  ,  $C_1 = -\frac{1}{2}$

$$a_n = -\frac{1}{2} (-1)^n + \frac{1}{6} (3)^n$$

③ គណនាតាមលំនាំដើម ②

$$a_5 = -\frac{1}{2} (-1)^5 + \frac{1}{6} (3)^5 = \frac{1}{2} + \frac{243}{6} = \frac{246}{6} = 41$$