HW due today!

Sequence: list of #'s!

Alfred: 1, 4, 3, 14, 5.9 ← no pattern

Jay: 2, 5, 7, 13, 15

Italian dude: 1, 1, 2, 3, 5, 8, 13, 21, 34

recursive formula

2 things needed

① the formula itself.

② a starting pt.

"initial value"

init. values

$a_1 = 1$
$a_2 = 1$

next # = current # + previous #

recursive formula

$$\boxed{a_{n+1} = a_n + a_{n-1}}$$

Example. Create a seq by

$$\boxed{x_{\boxed{n+1}} = (1 + x_n^2)(1 - x_{n-1}^2)}$$

where $x_1 = 0$ Find x_3, x_4, x_5

$x_2 = 1$

$n+1$

$x_3 = (1 + \underbrace{(1)^2}_{x_2})(1 - \underbrace{0^2}_{x_1})$

$= 2 \cdot 1 = 2$

$x_4 = (1 + \underbrace{2^2}_{x_3})(1 - \underbrace{1^2}_{x_2})$

$= 0$

$x_5 = (1 + \underbrace{0^2}_{x_4})(1 - \underbrace{2^2}_{x_3})$

$= 1(-3) = -3$

Lucas #'s

$L_1 = 2$ $\qquad L_{n+1} = L_n + L_{n-1}$

$L_2 = 1$

2, 1, 3, 4, 7, 11, 18, 29,

Fibonacci #'s : 1, 1, 2, 3, 5, 8, 13, 21, ...

$f_1 = 1$

$f_2 = 1$

← init values

$$f_{n+1} = f_n + f_{n-1}$$

$$(q_n) = \frac{f_{n+1}}{f_n}$$

What is

$$q_1 = \frac{f_{1+1}}{f_1} = \frac{f_2}{f_1} = \frac{1}{1}$$

$$q_2 = \frac{f_3}{f_2} = \frac{2}{1}$$

$$q_3 = \frac{3}{2}$$

$$q_4 =$$

$$q_5 =$$