

1. Write the first four terms of the sequence defined below. (This generates the **Fibonacci numbers**.)

$$a_1 = 1, \quad a_2 = 1, \quad a_{n+1} = a_n + a_{n-1}$$

2. Find a formula for the n th terms of the sequence $5, \frac{3}{2}, \frac{1}{3}, -\frac{1}{4}, -\frac{3}{5}, -\frac{5}{6}, -1, \dots$

3. Which of the following sequences converge, and which diverge? Find the limit of each convergent sequence.

a) $a_n = (-1)^n \left(1 - \frac{1}{n}\right)$

b) $a_n = 2 + (-1)^n$

c) $a_n = \frac{2n+1}{1-3\sqrt{n}}$

d) $a_n = \left(\frac{2}{n}\right)^{1/n}$

e) $a_n = \frac{1 - \cos n}{n^2}$

Q: What are the next two letters in this sequence: A E F H I K L M ?