

Worksheet 3/12/2025

1. Write the first 5 terms of the sequence

(a) $\left\{ \frac{n^2-1}{n^2+1} \right\}_{n=2}^{\infty}$

(b) $a_1 = 1, a_{n+1} = 2a_n + 1$

(c) $a_0 = a_1 = 1, a_{n+1} = a_n + a_{n-1}$

2. Find a formula for the general term a_n of the sequence

(a) $\frac{1}{3}, \frac{1}{5}, \frac{1}{7}, \frac{1}{9}, \frac{1}{11}, \dots$

(b) $\frac{1}{3}, -\frac{1}{5}, \frac{1}{7}, -\frac{1}{9}, \frac{1}{11}, \dots$

3. Explain why the following sequence is decreasing: $a_n = \frac{n}{2n-3}, n \geq 2$.