

Sequences

1. Find the sum of the first n terms of these sequences:

a) $1, 3, 9, 27, \dots$

b) $1, \frac{1}{4}, \frac{1}{16}, \frac{1}{64}, \dots$

2. Find the sum of the first $2n$ terms of these sequences:

a) $1, 1, \frac{1}{2}, 2, \frac{1}{4}, 4, \frac{1}{8}, 8, \frac{1}{16}, \dots$

b) $16, 2, 8, 4, 4, 8, 2, 16, \dots$

3. Given the sequence

$$x_n = 2n^2 - 5n$$

find out the difference between the n th term and the next term. For what value of n is the next term greater by 77

4. Find the sum to infinity of:

$$\frac{1}{2} + \frac{1}{4} + \frac{2}{8} + \frac{3}{16} + \frac{5}{32} + \frac{8}{64} + \frac{13}{128} + \dots$$

5. Find the sum to infinity of the following series:

a. $1 + 1 - \frac{1}{2} + \frac{1}{4} + \frac{1}{4} + \frac{1}{16} - \frac{1}{8} + \frac{1}{64} - \frac{1}{16} + \dots$

b. $125 + \frac{1}{5} + 25 + \frac{1}{25} + 5 + \frac{1}{125} + 1 + \frac{1}{625} + \dots$