

MAT 137 (Calculus II) Prof. Swift

Worksheet on Sequences

1. Write down the first 4 terms of the sequence $\{(-1)^n n^2\}_{n=1}^{\infty}$. Give your answer by filling in the blanks: $\{(-1)^n n^2\}_{n=1}^{\infty} = \{ \quad , \quad , \quad , \quad , \dots \}$.

2. Suppose the first few terms of a sequence are $\{\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \dots\}$. Find a possible formula for a_n such that $\{a_n\}_{n=1}^{\infty} = \{\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \dots\}$.

What is the limit of the sequence? $\lim_{n \rightarrow \infty} a_n =$

3. An arithmetic sequence satisfies $a_{n+1} = a_n + c$ for all n , where c is a constant.

Fill in the blanks, assuming the following is an arithmetic sequence: $\{3, 1, \quad , \quad , \quad , \dots\}$.

4. A geometric sequence satisfies $a_{n+1} = r \cdot a_n$ for all n , where r is a constant.

Fill in the blanks, assuming the following is a geometric sequence: $\{3, 1, \quad , \quad , \quad , \dots\}$.

5. Guess the limit of the sequence $\{a_n\}_{n=1}^{\infty} = \{3, 3.1, 3.14, 3.141, 3.1415, 3.14159, \dots\}$.

$\lim_{n \rightarrow \infty} a_n =$