Double Integrals and Change of Variables
August 7 - AM

1. Find the first four terms of the given sequences.

   (a) $a_n = 5 \cdot 2^n$

   (b) $a_n = \sin\left(\frac{n\pi}{2}\right)$

2. Determine whether the following sequences are geometric. If so, find the common ratio.

   (a) 3, 18, 108, 648 ...

   (b) 3.9, -19.5, 97.5, -487.5 ...

   (c) 1, 1, -2, 2, -8, 8, ...

3. Write the recursive equations for the following sequences.

   (a) $\{6561, 81, 9, 3, ...\}$

   (b) $\{1, 6, 14, 30, 62\}$

4. Consider the recursive sequence defined by $a_{n+1} = \frac{1}{4}a_n + \frac{3}{4}$ with $a_1 = 2$. Does the sequence converge? If so, what is the limit?

5. Consider the recursive sequence defined by $a_{n+1} = \frac{3}{a_n}$ with $a_1 = 2$. Does the sequence converge? If so, what is the limit?