

PRINT your name:

Answer each question completely. You must fully justify your answers to get credit. Even a correct answer with no justification is wrong.

1. Let $\{a_n\}_{n=1}^{\infty}$ satisfy $a_1 = 6$, $a_{n+1} = \frac{2a_n}{3}$ for $n > 1$.

Write the first four terms of the sequence and then give a formula for a_n that does not depend explicitly on previous terms.

2. Let $b_n = \frac{\sqrt{n^2 + 5}}{n^2} + \cos\left(\frac{\pi}{n}\right)$.

Does the sequence $\{b_n\}_{n=1}^{\infty}$ converge or diverge?

If it converges, **calculate the limit**. If it diverges, explain why.