2. [14 points] Consider the following sequences, all defined for \( n = 1, 2, 3, \ldots \)

\[
a_n = \int_0^n 10e^{-t} \, dt \\
b_n = (-1)^n \frac{100}{n^{0.75}} \\
c_n = 5(-3)^{n-3}
\]

a. [3 points] Which sequences are monotone? No justification is required for this part of the problem. Circle your final answer(s) below.

Circle your answer(s): \( a_n \) \( b_n \) \( c_n \) NONE

b. [3 points] Which sequences are bounded? No justification is required for this part of the problem. Circle your final answer(s) below.

Circle your answer(s): \( a_n \) \( b_n \) \( c_n \) NONE

c. [3 points] Which sequences are convergent? No justification is required for this part of the problem. Circle your final answer(s) below.

Circle your answer(s): \( a_n \) \( b_n \) \( c_n \) NONE

d. [5 points] Write a closed form expression for the series \( \sum_{n=2}^{2023} c_n \). Your expression should be able to be evaluated using a simple calculator (i.e. no letters, no ellipses \( \ldots \) and no sigma notation). Do not simplify the numbers in your expression.

Answer: \( \sum_{n=2}^{2023} c_n = \)