

3. [12 points] Consider the following sequences, all defined for  $n = 1, 2, 3, \dots$

$$a_n = \int_0^n 10e^{-t} dt$$

$$b_n = (-1)^n \frac{100}{n^{0.75}}$$

These are the same first two sequences from the previous problem.

- a. [6 points] Does the series  $\sum_{n=1}^{\infty} a_n$  converge or diverge? Fully justify your answer, including full mechanics of any tests you use. *Circle one:* **Converges** **Diverges**

- b. [6 points] Does the series  $\sum_{n=1}^{\infty} b_n$  converge or diverge? Fully justify your answer, including full mechanics of any tests you use. *Circle one:* **Converges** **Diverges**