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

$$a_n = \int_0^1 e^{-t} \, dt$$

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

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