

## Quiz 1

Math 102, Term 171

NAME:

ID:

**Problem 1.** Consider  $S = \lim_{n \rightarrow \infty} \sum_{i=1}^n \left( \frac{i^3}{n^4} + \frac{1}{n} \right)$

1. Evaluate  $S$ .
2. Write the given limit  $S$  as a definite integral.
3. Determine a region whose area is equal to  $S$ .

**Problem 2.** Using three approximating rectangles and left-end points, estimate the area under  $y = e^{-x}$  between  $x = 0$  and  $x = \ln 8$ .