Math 132 - Homework 4

Name _____

March 31, 2021

Score _____

The following problems are from the suggested homework. Show all work to receive full credit. Supply explanations when necessary. This assignment is due April 7.

---

1. (2 points) Use the trapezoidal rule with $n = 6$ to approximate $\displaystyle\int_0^3 \frac{1}{1+x^3}\,dx$.

2. (2 points) Rewrite as a limit and evaluate: $\displaystyle\int_1^\infty xe^{-x}\,dx$

Turn over.

3. (2 points) Rewrite as a limit and evaluate: $\displaystyle\int_0^1 \frac{1}{1-x}\,dx$

4. (1 point) Find an explicit formula for a_n where $a_1 = 1$ and $a_n = a_{n-1} + n$ for $n \geq 2$.

5. (1 point) Find the limit of the sequence with $a_n = \dfrac{\sqrt{n}}{\sqrt{n+1}}$.

6. (2 points) Evaluate the series or show that it diverges: $\displaystyle\sum_{n=1}^{\infty} \left[2^{1/n} - 2^{1/(n+1)}\right]$