

Quiz 4

MATH 112-017 and 112-019

New Jersey Inst. Tech.

Prof. Nicholas Dubicki

Time Limit: 15 min.

Name: _____

Date: _____

Section: _____

1. Take the following formulas.

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$$\ln 2 = \int_1^2 \frac{1}{x} dx ; \quad T_n = \frac{\Delta x}{2} \sum_{k=0}^n w_k y_k ; \quad |E_T| \leq \frac{M(b-a)^3}{12n^2}, \text{ for } M = \max_{x \in [a,b]} |f''(x)| .$$

- Give an upper bound on the error associated with estimating the above integral with the trapezoidal rule using $n = 3$ subintervals.
- Estimate $\ln 2$ with an integral using the trapezoidal rule. Use $n = 3$ subintervals.
- Given that $\ln 2 = 0.693147$ to six decimal places, report the absolute error of the estimate in (b) to 3 decimal places, $|\ln 2 - T_3|$.