Name: _____

Math 252 Calculus II (Bueler) Wednesday 21 February 2018

Quiz #5

In class. 25 minutes. No textbook or notes or calculator. 30 points total.

1. (*10 pts*) Compute the midpoint rule approximation M_4 ($n = 4$ subintervals) for

$$\int_0^4 \frac{1}{2x + \cos(\pi x)}\,dx$$

Simplify the answer to a fraction, a rational number. (*Hint.* This is *designed* to work out nicely!)

2. (*5 pts*) At right, sketch the trapezoid rule approximation T_3 for the integral

$$\int_0^\pi \sin x\,dx$$

(There is no need to compute either T_3 or the integral.) Is T_3 an

underestimate

or an

overestimate

of the exact value? (*Circle one.*)

3. **(a)** (*5 pts*) Write the improper integral as a limit and sketch the area it represents:

$$\int_0^8 \frac{1}{\sqrt[3]{x}}\,dx =$$

(b) (*5 pts*) Evaluate the integral in part **(a)**.

4. (*5 pts*) Evaluate the improper integral, starting by writing it as a limit:

$$\int_1^\infty x^2 e^{-x^3}\,dx =$$