Name:

<div align="center">

Math 10a
October 23, 2014
Quiz #6

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1. (2 points) Write down, in summation notation, the estimate for

$$\int_{-1}^{1} \frac{1}{\sqrt{2\pi}} e^{-x^2/2} dx$$

   using a left Riemann sum with 100 intervals.

2. (3 points) If you were to estimate the area under the graph of $\sin(x)$ from 0 to π using the trapezoid rule, how many trapezoids would you need to guarantee accuary to within $1/10$? You may use:

$$\text{error}(T_n) \leq \frac{(\max |f''|)(b-a)^3}{12n^2}$$

   and the fact that $\pi^3 = 31.00627\dots.$

3. Consider $f(x) = x^2 - x$

(a) (1 point) Sketch the graph of f from $x = -1$ to $x = 1$.

(b) (1 point) Draw the five rectangles of width $2/5$ which approximate the area under the curve using the midpoint rule.

(c) (3 points) Approximate

$$\int_{-1}^{1} (x - x^2) dx$$

using a midpoint rule with five intervals. Simplify your answer to a single fraction.