

_____ / 15 total points

Quiz #2

Name: _____

Math 181, Section 5, Prof. Beydler

Wednesday, October 11, 2017

Directions: Show all work. No books or notes. A **scientific calculator** is allowed. Your desk and lap must be clear (no phones, no smart watches, no notebooks, etc.). Write your answers in the indicated places, or box your answers. Good luck!

1. (5 points) Evaluate the following integral.

$$\int \frac{8x^2 + 4x + 1}{x(2x+1)^2} dx$$

Answer: _____

2. (5 points) Evaluate the following integral.

$$\int \frac{1}{1+e^x} dx$$

Answer: _____

3. (5 points) Use Simpson's Rule with $n = 4$ steps to approximate $\int_1^5 e^x dx$ and estimate the error in the approximation (i.e. find an upper bound for $|E_S|$). Write both answers to 6 decimal places.

$$\int_a^b f(x) dx \approx \frac{\Delta x}{3} [f(x_0) + 4f(x_1) + 2f(x_2) + 4f(x_3) + \cdots + 2f(x_{n-2}) + 4f(x_{n-1}) + f(x_n)]$$

$$|E_S| \leq \frac{M(b-a)^5}{180n^4}$$

Approximation: _____

Estimated error: _____