Quiz 1

MATH 19B - Discussion Section B
October 6, 2016

Name: _____

Directions: Show all your work and make sure to box in your final answer. Please leave answers in exact form.
Formulas: Let $N \in \mathbb{N}$

$$\sum_{i=1}^{N} 1 = N, \quad \sum_{i=1}^{N} i = \frac{N(N+1)}{2}, \quad \sum_{i=1}^{N} i^2 = \frac{N(2N+1)(N+1)}{6}, \quad \text{and} \quad \sum_{i=1}^{N} i^3 = \frac{N^2(N+1)^2}{4}$$

(1) Evaluate the following series:

(a)

$$\sum_{n=1}^{50} (-1)^n$$

(b)

$$\sum_{i=1}^{100} \left[3^i - 3^{i-1}\right]$$

(2) Evaluate the following:

$$\int_{-5}^{5} (3x+1)\mathrm{d}x$$

(a) By determining a formula for R_N and evaluating the limit as $N \to \infty$

(b) By using the geometry of the function