

Math 31L Lab Quiz #3

Blake, Fall 1997

Name: _____

1. (10 points) Suppose f is a continuous function that is monotonically increasing over the interval $[a,b]$. List the following quantities in order from smallest to largest.

A. $\int_a^b f(t) dt$

B. Right-hand Sum with $N = 50$.

C. Right-hand Sum with $N = 100$.

D. Left-hand Sum with $N = 50$.

E. Left-hand Sum with $N = 100$.

_____ \leq _____ \leq _____ \leq _____ \leq _____

2. (6 points) Let $f(x) = x + \frac{4}{x}$ for $1 \leq x \leq 4$. Suppose we use three subintervals to construct a Riemann sum to approximate $\int_1^4 f(x) dx$. Circle the smallest possible value the Riemann sum could have, and circle the largest possible value the Riemann sum could have.

$10\frac{1}{3}$

$11\frac{1}{3}$

$12\frac{1}{3}$

[A graph of f was pasted here.]

$13\frac{1}{3}$

$14\frac{1}{3}$

$15\frac{1}{3}$

3. (5 points) Indicate the definite integral which is approximated by the sum $\sum_{k=1}^{20} \sin\left(\frac{k\pi}{80}\right) \frac{\pi}{80}$.

4. (9 points) Circle every sum below which is a good approximation of $\int_1^5 x^3 dx$.

$\sum_{k=1}^{1000} (1 + .004k)^3 (.004)$

$\sum_{k=0}^{999} (1 + .004k)^3 (.004)$

$\sum_{k=0}^{999} (1.002 + .004k)^3 (.004)$

$\sum_{k=1}^{1000} (.004k)^3 (.004)$

$\sum_{k=0}^{799} (1 + .005k)^3 (.005)$

$\sum_{k=1}^{400} k^3 (.01)$

$\sum_{k=1}^{500} (1 + .004k)^3 (.004)$

$\sum_{k=1}^{500} (1 + .008k)^3 (.008)$

$\sum_{k=1}^{500} (.008k)^3 (.008)$