Math 31L Lab Quiz #4

Blake, Fall 1998

Name: ____________________________

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

A. $\int_a^b f(t)dt$ B. Right-hand Sum with $N=1000$. C. Right-hand Sum with $N=2000$.

D. Left-hand Sum with $N = 3$. E. Left-hand Sum with $N = 6$.

______ $\leq$ ______ $\leq$ ______ $\leq$ ______ $\leq$ ______

2. (8 points) Let $f(x)=3+sin(x)$ for $0 \leq x \leq 2\pi$. Suppose we use three subintervals to construct a Riemann sum to approximate $\int_0^{2\pi} f(x)dx$. Circle the smallest possible value the Riemann sum could have, and circle the largest possible value the Riemann sum could have. Indicate which is which.

2π	4π	6π	8π
$\frac{\pi}{3}(4-\sqrt{3})$	$\frac{\pi}{3}(2+\sqrt{3})$	$\frac{\pi}{3}(4+\sqrt{3})$	$\frac{\pi}{3}(8+\sqrt{3})$
$\frac{\pi}{3}(16-\sqrt{3})$	$\frac{\pi}{3}(14+\sqrt{3})$	$\frac{\pi}{3}(20+\sqrt{3})$	$\frac{\pi}{3}(10-\sqrt{3})$

3. (3 points) Indicate the definite integral which is approximated by the sum $\sum_{k=1}^{100} e^{-(1+\frac{k}{100})^2} \frac{1}{100}$.

4. (9 points) Circle every sum below which is a good approximation of $\int_1^6 \sqrt{4+x^3}\, dx$.

$\sum_{k=1}^{5000} \sqrt{4+(.001k)^3}(.001)$	$\sum_{k=0}^{4999} \sqrt{4+(1+.001k)^3}\,(.001)$	$\sum_{k=1}^{1000} \sqrt{4+(.005k)^3}\,(.005)$
$\sum_{k=1}^{1000} \sqrt{4+(1+.005k)^3}\,(.005)$	$\sum_{k=0}^{2499} \sqrt{4+(1+.002k)^3}\,(.002)$	$\sum_{k=1}^{2500} \sqrt{4+(1+.001k)^3}(.001)$
$\sum_{k=0}^{2499} \sqrt{4+(1.001+.001k)^3}(.002)$	$\sum_{k=0}^{2499} \sqrt{4+(1.001+.002k)^3}\,(.002)$	$\sum_{k=1}^{2500} \sqrt{4+x^3}\,(.002)$