MATH 151
Mrs. Bonny Tighe

QUIZ 8A

25 points
5.1,5.2

NAME _____

Section _____ 4/21/06

1. Find an expression for the area under the graph of $f(x)=2\sin^3 3x + x\sqrt{x}$ on the interval [1,5] as a Riemann Sums using summation notation. Do not evaluate.

2. Determine a region whose area is equal to each of the following and express each as a definite integral, but do not evaluate.

a) $\lim_{n\to\infty}\sum_{i=1}^{n}\frac{\pi}{8n}\sqrt{\frac{\pi^2 i^2}{64n^2}+\sin\frac{\pi i}{8n}}$

b) $\lim_{n\to\infty}\sum_{i=1}^{n}\frac{3}{n}\left(\sqrt{\frac{6i}{n}}+\frac{n}{3i}-\tan\frac{3i}{n}\right)$

3. Estimate the area under the graph $f(x) = x^2 + 2$ from x = 0 to x = 4 using n=4, four approximating rectangles and the right endpoints, the left endpoints and then the midpoints. Graph f(x). Which estimation is an underestimate or an overestimate?

4. Given that $\int_2^5 f(x)dx = 3/8$ *and* $\int_{-2}^{2} f(x)dx = 1/8$, *what is* $\int_{-2}^{5} f(t)dt$?

5. Evaluate the integral by interpreting it in terms of areas, the graph and using elementary geometry. $\int_1^3 (4-x)dx$

6. Evaluate the definite integral $\int_1^3 (2+3x-x^2)dx$ using the definition (the limit of the summation) $\sum_{i=1}^{n} c = cn$ $\sum_{i=1}^{n} i = \frac{n^2}{2} + \frac{n}{2}$ $\sum_{i=1}^{n} i^2 = \frac{2n^3}{6} + \frac{3n^2}{6} + \frac{n}{6}$