MATH 151                    **QUIZ 8**          NAME _____
Mrs. Bonny Tighe               25 points
                               5.1,5.2        Section _____  4/21/06

1. Estimate the area under the graph $f(x) = (x-1)^2$ from $x = 2$ to $x = 4$ using four, $n = 4$, approximating rectangles and right endpoints, left endpoints and midpoints. Graph $f(x)$. Which estimation is an underestimate or an overestimate?

2. Find an expression for the area under the graph of $f(x) = \cos^3 x^2 - x\sqrt{x}$ on the interval $[1,4]$ as a Riemann Sums using summation notation. Do not evaluate.

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

a) $\lim\limits_{n \to \infty} \sum\limits_{i=1}^{n} \dfrac{\pi}{2n} \sqrt{3\dfrac{i\pi}{2n} + \tan\dfrac{i\pi}{2n}}$

b) $\lim\limits_{n \to \infty} \sum\limits_{i=1}^{n} \dfrac{5}{n}\left( \sqrt{\dfrac{10i}{n}} + \dfrac{n}{5i} - \sin\dfrac{5i}{n} \right)$

4. Given that $\int_{2}^{5} f(x)dx = 2/7$ and $\int_{-2}^{2} f(x)dx = 4/7$, what is $\int_{-2}^{5} f(t)dt$ ?

5. Evaluate the definite integral $\int_{2}^{4} (x^2 + x - 1)dx$ using the definition (the limit of the summation) $\sum_{i=1}^{n} c = cn$ $\quad \sum_{i=1}^{n} i = \frac{n^2}{2} + \frac{n}{2}$ $\quad \sum_{i=1}^{n} i^2 = \frac{2n^3}{6} + \frac{3n^2}{6} + \frac{n}{6}$

6. Evaluate the integral by interpreting it in terms of areas using graphing and simple geometry. $\int_{1}^{3} (4 - x)dx$