

MAT 122 – 001

Spring 2008

Test one

Show all work. Calculators may not be used.

1. Write an expression to estimate  $\int_2^{12} f(x) dx$  using  $n=10$  midpoint rectangles.

2. Describe the area represented by  $\lim_{n \rightarrow \infty} \sum_{k=1}^n \frac{\pi}{4n} \times \tan\left(k \times \frac{\pi}{4n}\right)$ .

3 Determine  $\int_0^{\pi} (4 \sin \theta - 3 \cos \theta) d\theta$ .

4. Determine  $\int_1^2 \frac{x+5x^7}{x^3} dx$ .

5. Determine  $\int_1^8 \frac{x-1}{\sqrt[3]{x^2}} dx$ .

6.  $g(x) = \int_{1-3x}^1 \frac{t^3}{1+t^2} dt$ . Determine  $g'(x)$ .

7.  $v(t) = t^2 - 6t + 8$ .

7a. Find the displacement during  $[0, 6]$ .

7b. Find the distance traveled during  $[0, 6]$ .