MAT 162—Exam #2A—10/24/13

Name: _____

Show all work using correct mathematical notation. Calculators are not permitted.

1. (15 points) Evaluate $\displaystyle\int_0^{\pi/2} \cos^3 x \, dx$.

2. (10 points) Evaluate $\displaystyle\int \frac{2x+1}{x^2+25} \, dx$.

3. (15 points) Evaluate $\displaystyle\int xe^{3x}\,dx$.

4. (10 points) Consider the integral $\displaystyle\int_1^3 x^3\,dx$.

(a) Use the Midpoint Rule with $N = 5$ to approximate the integral. Just write out the terms in your sum–do not attempt to add them up.

(b) Determine the maximum possible error in your estimate from part (a).

5. (10 points) Evaluate the improper integral $\int_4^\infty \frac{1}{x^{3/2}} \, dx$.

6. (15 points) Evaluate $\int \frac{2x^3 + 5x^2 + 15x + 5}{x^2 + x} \, dx$.

7. (5 points) Determine whether the improper integral $\int_2^\infty \dfrac{x^2 + 5}{x^3 - 7}\, dx$ converges or diverges by making an appropriate comparison.

8. (20 points) Evaluate $\int \dfrac{x^3}{\sqrt{9 + x^2}}\, dx$.