MATH 152 Assignment 4, Fall 2022.

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Webassign Exercises

7.4 Exercises 7, 10, 19, 26.

7.5 Exercises 1, 3, 8, 13.

7.7 Exercises 14, 30.

7.8 Exercises 1, 9, 11, 20.

Written Exercises

1 (Section 7.4) Calculate $\int_0^1 \frac{x-4}{x^2-5x+6}dx$. I get $\ln 3 - 3\ln 2$.

2 (Section 7.4) Calculate $\int \frac{2+2x-x^2}{x^3-1}dx$. I get $\ln|x-1| - \ln|x^2+x+1| + C$.

3 (Section 7.5) Calculate $\int \ln(1+x^2)dx$. First use integration by parts to get rid of the logarithm.

4 (Section 7.5) Calculate $\int dx/(1+e^x)$. First use a substitution.

5 Section 7.7 Exercise 21. To save some work for part (a), use $n = 6$ not $n = 10$.
You should get $T_6 = 1.954097, M_6 = 2.023030$ and $S_6 = 2.000863$.
The answers to part (c) are in the back of the textbook. Show you working.

6 (Section 7.7) There is a relation between the Trapezoidal rule T_n, the Midpoint rule M_n and Simpson's rule S_n, namely,

$$\frac{1}{3}T_n + \frac{2}{3}M_n = S_{2n}.$$

Verify this for $n = 1$.

7 (Section 7.8) Evaluate the improper integral $\int_1^\infty \frac{dx}{x^2+x}$.
Note, it must be convergent because $\frac{1}{x^2+x} < \frac{1}{x^2}$ for $x \geq 1$ and $\int_1^\infty \frac{dx}{x^2} = 1$.

8 (Section 7.8) Evaluate the improper integral $\int_0^1 t\ln t\,dt$.

Midterm 2 is on Friday October 28th at 8:30am.

It covers the material covered on Assignments 3 and 4 which is Sections 6.5, 7.1−7.5, 7.7, and 7.8.