MATH 285: Methods of Applied Math
Department of Mathematics, U of R   **Spring 2024**
Homework 3   **Handed out**: Wednesday, 02/28/24
                                                       Due: Wednesday, 03/13/24

   Do ALL Problems for full credit. Each main problem is worth the same number of points; almost likewise for each subproblem. Carefully explain your steps. If you invoke a "well known" theorem, make clear precisely which theorem you are using and justify its use.

1. Do Prob. 2, p71 from Strauss

2. Do Prob. 12, p80 from Strauss

3. Do Prob. 2, p89 from Strauss

4. Do Prob. 6, p89 from Strauss

5. Let $l = 1$, plot the function

$$S_m(x) = \frac{4}{\pi} \sum_{n=1}^{m} \left(\frac{1}{2n-1} \sin \frac{(2n-1)\pi x}{l} \right)$$

   on $[0, 1]$ for $m = 1, 10, 100, 1000$ in seperate graphs using your favorite math software or computer language. This is the Fourier series for Prob.2, p.89.

6. Do Prob. 3, p92 from Strauss

7. Do Prob. 4, p92 from Strauss

8. Do Prob. 9, p.101 from Strauss

9. Do Prob. 11, p101 from Strauss

10. Do Prob. 2, p111 from Strauss