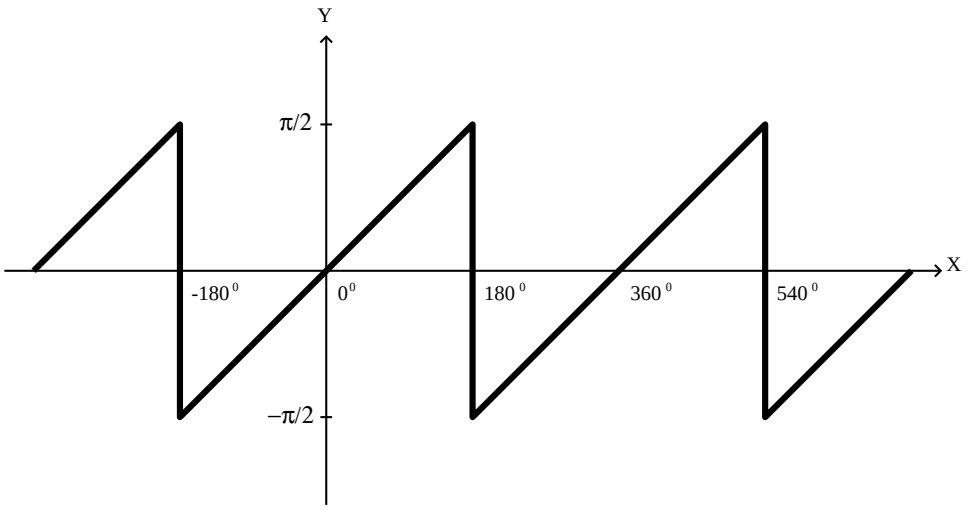
Homework #1 (4190.410)

Due: September 18, 2001

A graph of a "Ramp Wave" is shown below. Four curves, representing successive Fourier series approximations to a ramp wave, are to be plotted on the same set of axes.



The four curves are given by the following equations:

$$
\begin{aligned}
y_1 &= \sin(x) \\
y_2 &= \sin(x) - \tfrac{1}{2}\sin(2x) \\
y_3 &= \sin(x) - \tfrac{1}{2}\sin(2x) + \tfrac{1}{3}\sin(3x) \\
y_4 &= \sin(x) - \tfrac{1}{2}\sin(2x) + \tfrac{1}{3}\sin(3x) - \tfrac{1}{4}\sin(4x)
\end{aligned}
$$

where x goes from $-180°$ to $540°$.

Do:

1. Print your name, student ID number, course (e.g., CSE4190.410), and semester (e.g., "Fall 2001").
2. Plot the x and y axes with tic marks.
3. Plot the four curves y_1, y_2, y_3, and y_4 on that one set of axes. Distinguish these curves using different dashed patterns.
4. Plot the ramp wave that they are approximating on the same set of axes. Use thicker lines to make this stand out.