HOMEWORK #7 (12.3 ~12.4)

Due on May 3

1) Expand the given function in an appropriate cosine or sine series. (Problem 23, page 668)

   $f(x) = |\sin x|, \quad -\pi < x < \pi$

2) Find the half-range cosine and sine expansion of the given function (Problem 31, page 668)

   $f(x) = \begin{cases} x, & 0 < x < 1 \\ 1, & 1 \le x < 2 \end{cases}$

3) Expand the given function in a Fourier series (Problem 37, page 668)

   $f(x) = x + 1, \quad 0 < x < 1$

4) Proceed as in Example 4 to find a particular solution $x_p(t)$ of equation (11) when

   $m = 1, \quad k = 10$, and the driving force $f(t)$ is as given. Assume that when f(t) is extended to the negative t-axis in a periodic manner, the resulting function is odd. (Problem 39, page 668)

   $f(t) = \begin{cases} 5, & 0 < t < \pi \\ -5, & \pi < t < 2\pi \end{cases}; \quad f(t + 2\pi) = f(t)$

5) Find the complex Fourier series of f on the given interval. (Problem 1, page 672)

   $f(x) = \begin{cases} -1, & -2 < x < 0 \\ 1, & 0 < x < 2 \end{cases}$