Assignment # 2
Math 513

1) Find Fourier cosine and Fourier sine series for the following functions in $[0, \pi]$

a)

$$f(x) = 0,\ 0 \le x \le \pi/2$$
$$= 1,\ \pi/2 \le x \le \pi$$

b) $f(x) = \sin x$

c) $f(x) = \cos x$

2) Find Fourier series in $[-\pi, \pi]$ for following $f(x)$

a)

$$f(x) = 0,\ -\pi \le x \le 0$$
$$= x,\ 0 \le x \le \pi$$

b) $|x|$

c) $e^{|x|}$

3) Consider following

$f(x) = x$, an odd function in $[-\pi, \pi]$

Find its Fourier series in $[-\pi, \pi]$, Fourier sine and cosine series in $[0, \pi]$. Compare and comment on the results.

Similarly consider f(x) = $|x|$

Find the three series in the respective intervals indicated above.