This portion of the test is take-home and you are on your honor to work alone. By turning in the assignment with your name, you are verifying that you have worked alone on this problem.

[Note: I will be on campus Saturday. If you get this to me by 11am on Saturday, I will definitely have them graded by Monday class.]

1. (18 pts) Let $f(x)$ be periodic with one period defined on $-2 < x < 2$.

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

(a). Sketch at least 3 periods of the function.

(b). Find the Fourier Series Coefficients for $f(x)$. [Use odd/even properties, if helpful. You must set up any integrals, clearly defining the function to be integrated and appropriate bounds. If you use an integration table or software to perform the integration, only integrate the indefinite integral. Then show all of your work for plugging in the bounds.]

(c). Write out the first five nonzero terms of the final Fourier Series (expanded and simplified).