3. The function shown above,

\[ f(x) = \begin{cases} 
0 & \sin(x) \leq 0 \\
\sin(x) & \sin(x) > 0 
\end{cases} \]

is periodic with period \(2\pi\). Find the Fourier expansion of \(f(x)\) from terms \(n = 0\) through \(n = 4\). Make a graph of \(f(x)\), and the resulting Fourier series approximation. Use Gnuplot, MatLab etc.