1. (20 pts) Apply the non-conservative form of the Lax-Wendroff method (first one discussed in class) to the problem

\[ u_t + (2 + \sin(x))u_x = 0 \]
\[ u(0, t) = 3 + \sin(5t) \]
\[ u(x, 0) = 3 + \exp(-50(x - 4)^2) \]

for \( x \in (0, 10) \) and \( 0 \leq t \leq 1 \). Use the condition \( u_{xx} = 0 \) for the exit boundary condition. Use \( dx = 1d - 2 \) and \( dt = 1d - 5 \). Create a plot showing the initial condition and solution at the 20%, 40%, 60%, 80% and 100% marks, as in HW3 and CP2, using \( np = (nmax-1)/5 \), where \( nmax \) is the total number of time steps. Submit the plots and the codes.