Suppose \( a = 1, \ L = 1 \) and we are looking for the solution of

\[
\begin{align*}
    u_{tt} &= u_{xx}, \\
    u(0, t) &= u(L, t) = 0 \quad \text{for all} \ t, \\
    u(x, 0) &= f(x) \quad 0 < x < L \\
    u_t(x, 0) &= 0 \quad 0 < x < L,
\end{align*}
\]

where \( f(x) \) is the function \( cx \) for \( 0 \leq x \leq 1/2 \) and \( c(1-x) \) for \( 1/2 \leq x \leq 1 \). Usually \( c \) is something small for a plucked string so let’s suppose \( c = 0.05 \). Here are the plots for time \( t = 0, \ t = 0.25, \ t = 0.5 \) and \( t = 1 \). We let \( F(x) \) be the odd extension of \( f(x) \).