

HW #10a

Math 182, Spring 2009

Due Friday, April 24, 2009, by 11:00 a.m.

Solve the partial differential equation,

$$\begin{cases} \rho_0 u_{tt} = T_0 u_{xx} + \alpha u, \rho_0 > 0, T_0 > 0, \alpha < 0 \\ u(0, t) = u(L, t) = 0 \\ u(x, 0) = 0 \\ u_t(x, 0) = f(x) \end{cases}$$

using separation of variables.

Note: This problem represents the vibration of a non-uniform string.