1.) Given the above PDE with initial condition and boundary conditions, please describe the physical meaning of the initial conditions and boundary conditions. (4 points)

\[
\frac{\partial u}{\partial t} (x,t) = k \left( \frac{\partial^2 u}{\partial x^2} (x,t) \right)
\]

\[
u(x,0) = x
\]

\[
u(0,t) = 5
\]

\[
u(L,t) = 0
\]

2.) Using the PDE above, please find \( B \). (Hint: The formula was defined in class) (4 points)

3.) Is the above equation the wave equation or the heat equation? Explain how you know. (2 points)