

# Final Exam – Review – Part III

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## Problem:

Solve the following wave equation:

$$\begin{cases} u_{tt} = 4u_{xx} & 0 < x < 1, \quad t > 0 \\ u_x(0, t) = u_x(1, t) = 0 & t > 0 \\ u(x, 0) = x^2 - 3x & 0 < x < 1 \\ u_t(x, 0) = 3 \cos(\pi x) + 5 \cos(2\pi x) & 0 < x < 1 \end{cases}$$