

Dr. Z.'s Math 421 REAL Quiz #8

NAME: (print!) _____

E-MAIL ADDRESS: (print!) _____

1. Solve the boundary value problem

$$7 \frac{\partial^2 u}{\partial x^2} = \frac{\partial u}{\partial t} \quad , \quad 0 < x < \pi \quad , \quad t > 0 \quad ,$$

subject to

$$u_x(0, t) = 0 \quad , \quad u_x(\pi, t) = 0 \quad , \quad t > 0$$

$$u(x, 0) = f(x) \quad , \quad 0 < x < \pi \quad ,$$

where

$$f(x) = \begin{cases} 0, & \text{if } 0 \leq x < \pi/2; \\ 2, & \text{if } \pi/2 \leq x < \pi; \end{cases}$$

(You may use the ready-made formula)