

Dr. Z.'s Math 421(1), (Fall 2011, RU) REAL Quiz #8 (Nov. 17, 2011)

NAME: (print!) \_\_\_\_\_

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1. (5 points) Solve the boundary value pde problem:

$$\begin{aligned}u_{xx} &= u_{tt} \quad , 0 < x < \pi \quad , \quad t > 0 \quad ; \\u(0, t) &= 0 \quad , \quad u(\pi, t) = 0 \quad , \quad t > 0 \quad ; \\u(x, 0) &= \sin(7\pi x) \quad , \quad u_t(x, 0) = \sin(8\pi x) \quad , \quad 0 < x < \pi \quad .\end{aligned}$$

2. (5 points) Solve :

$$u_{xx} + u_{yy} = 0 \quad , \quad 0 < x < \pi \quad , \quad 0 < y < 1 \quad ,$$

Subject to

$$\begin{aligned}u(0, y) &= 0 \quad , \quad u(\pi, y) = 0 \quad , \quad 0 < y < 1 \quad ; \\u(x, 0) &= 0 \quad , \quad u(x, 1) = 5 \quad , \quad 0 < x < \pi \quad .\end{aligned}$$