

**MATH 385-X1 - DIFFERENTIAL
EQUATIONS: QUIZ 5**

FALL, 2004

Name : _____

Solve the boundary value problems [3 pts each].

(1) $u_{tt} = 4u_{xx}, 0 < x < 1, t > 0$

$$u(0, t) = u(1, t) = 0$$

$$u(x, 0) = \frac{1}{3} \sin(\pi x)$$

$$u_t(x, 0) = 5 \sin(2\pi x)$$

(3) $u_t = 2u_{xx}, 0 < x < \pi, t > 0$

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

$$u(x, 0) = x$$

(2) $3u_t = u_{xx}, 0 < x < 2, t > 0$

$$u(0, t) = u(2, t) = 0$$

$$u(x, 0) = 3 \sin\left(\frac{\pi x}{2}\right) - \sin(4\pi x)$$