Worksheet #25

(1) Are the following PDEs separable? If so, find the two differential equations to replace the PDE.

- $tu_{xx} + xu_t = 0$

- $(x + y^2)u_{xx} + u_{yy} = 0$

(2) Find the solution to the following heat conduction problem

$$100u_{xx} = u_t \qquad 0 < x < 1, \quad t > 0$$
$$u(0, t) = 0, \quad u(1, t) = 0, \quad t > 0$$
$$u(x, 0) = \sin(2\pi x) - \sin(5\pi x), \quad 0 \leq x \leq 1$$