

MATH 445 ASSIGNMENT 6

Fall 2009

Prof. Alexander

Due Friday October 9.

Kreyszig:

12.1 p. 537 #2, 6, 11, 16, 20, 26c

12.3 p. 546 #1, 2, 3, 5, 11, 12

and:

(I) Solve $xu_{xt} + 2tu = 0$ by separating variables. In other words, find all solutions of the form $u(x, t) = F(x)G(t)$.

Answer to some even-numbered problems and (I):

12.1 (2) $u = c_1(y)e^x + c_2(y)e^{-x}$ (6) $u = c_1(y)e^{-2xy} + c_2(y)e^{2xy}$ (16) $c = 6$ (20) $c = 2$, any ω .
(26)(c) Not of (3).

12.3 (2) $k(\cos \pi t \sin \pi x - \frac{1}{3} \cos 3\pi t \sin 3\pi x)$
(12)

$$\sum_{n=1}^{\infty} \left(\frac{.04}{\pi n^3} \sin \frac{n\pi}{2} \right) \sin nt \sin nx$$

(I) $u = Cx^k e^{-t^2/k}$