

Exact Solutions > Systems of Partial Differential Equations > Linear Systems of Two Second-Order Partial Differential Equations

1. Linear Systems of Two Second-Order Partial Differential Equations

1.
$$\frac{\partial u}{\partial t} = a \frac{\partial^2 u}{\partial x^2} + b_1 u + c_1 w$$
, $\frac{\partial w}{\partial t} = a \frac{\partial^2 w}{\partial x^2} + b_2 u + c_2 w$.

$$2. \quad \frac{\partial u}{\partial t} = a \frac{\partial^2 u}{\partial x^2} + f_1(t)u + g_1(t)w, \quad \frac{\partial w}{\partial t} = a \frac{\partial^2 w}{\partial x^2} + f_2(t)u + g_2(t)w.$$

3.
$$\frac{\partial^2 u}{\partial t^2} = k \frac{\partial^2 u}{\partial x^2} + a_1 u + b_1 w$$
, $\frac{\partial^2 w}{\partial t^2} = k \frac{\partial^2 w}{\partial x^2} + a_2 u + b_2 w$.

4.
$$\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = a_1 u + b_1 w$$
, $\frac{\partial^2 w}{\partial x^2} + \frac{\partial^2 w}{\partial y^2} = a_2 u + b_2 w$.

The EqWorld website presents extensive information on solutions to various classes of ordinary differential equations, partial differential equations, integral equations, functional equations, and other mathematical equations.

Copyright © 2004–2005 Andrei D. Polyanin

http://eqworld.ipmnet.ru/en/solutions/syspde/spde-toc1.pdf