



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

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

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

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

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

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.