



4. Other Second-Order Partial Differential Equations

4.1. Equations of Transonic Gas Flow

1. $a \frac{\partial w}{\partial x} \frac{\partial^2 w}{\partial x^2} + \frac{\partial^2 w}{\partial y^2} = 0$. *Equation of steady transonic gas flow.*

2. $\frac{\partial^2 w}{\partial y^2} + \frac{a}{y} \frac{\partial w}{\partial y} + b \frac{\partial w}{\partial x} \frac{\partial^2 w}{\partial x^2} = 0$. *Equation of steady transonic gas flow.*

4.2. Monge–Ampère Equations

1. $\left(\frac{\partial^2 w}{\partial x \partial y} \right)^2 - \frac{\partial^2 w}{\partial x^2} \frac{\partial^2 w}{\partial y^2} = 0$. *Homogeneous Monge–Ampère equation.*

2. $\left(\frac{\partial^2 w}{\partial x \partial y} \right)^2 - \frac{\partial^2 w}{\partial x^2} \frac{\partial^2 w}{\partial y^2} = A$. *Nonhomogeneous Monge–Ampère equation.*

3. $\left(\frac{\partial^2 w}{\partial x \partial y} \right)^2 - \frac{\partial^2 w}{\partial x^2} \frac{\partial^2 w}{\partial y^2} = f(x, y)$. *Nonhomogeneous Monge–Ampère equation.*

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.