



## Linear Diffusion Equations

- **Diffusion Equation**  $\frac{\partial w}{\partial t} = a \frac{\partial^2 w}{\partial x^2}$
- **Nonhomogeneous Diffusion Equation**  $\frac{\partial w}{\partial t} = a \frac{\partial^2 w}{\partial x^2} + \Phi(x, t)$
- **Convective Diffusion Equation with a Source**  $\frac{\partial w}{\partial t} = a \frac{\partial^2 w}{\partial x^2} + b \frac{\partial w}{\partial x} + cw + \Phi(x, t)$
- **Diffusion Equation with Axial Symmetry**  $\frac{\partial w}{\partial t} = a \left( \frac{\partial^2 w}{\partial r^2} + \frac{1}{r} \frac{\partial w}{\partial r} \right)$
- **Diffusion Equation of the Form**  $\frac{\partial w}{\partial t} = a \left( \frac{\partial^2 w}{\partial r^2} + \frac{1}{r} \frac{\partial w}{\partial r} \right) + \Phi(r, t)$
- **Diffusion Equation with Central Symmetry**  $\frac{\partial w}{\partial t} = a \left( \frac{\partial^2 w}{\partial r^2} + \frac{2}{r} \frac{\partial w}{\partial r} \right)$
- **Diffusion Equation of the Form**  $\frac{\partial w}{\partial t} = a \left( \frac{\partial^2 w}{\partial r^2} + \frac{2}{r} \frac{\partial w}{\partial r} \right) + \Phi(r, t)$

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.

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<http://eqworld.ipmnet.ru/en/solutions/lpde/diffusion-toc.pdf>